BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

Dr J. F. MONK

Volume 107
1987

PREFACE

Volume 107 contains 192 pages, 12 pages more than in Volume 106, which itself was 36 more pages than in 1985. This satisfactory state of affairs is due to the continued buoyancy of the Club's finances as well as due to much welcome material of a high standard from world wide sources and authorship (except, regretfully, from the museums and academic world of the UK). It is expected that the size of the *Bulletin* will be of similar length in 1988.

The help and advice of referees has been forthcoming as always, J. H. Elgood has kindly continued the task of compiling the index and the Hon Secretary and Hon Treasurer have kept the membership list up to date. All are gratefully acknowledged.

This is the last volume which will be published by the Caxton and Holmesdale Press, with whom the Club has had an excellent relationship ever since they first published the *Bulletin* in 1953. We have been particularly fortunate during that time to have had most helpful and perceptive co-operation from Peter Ball, to whom the Club, and especially the Editor, is most warmly grateful.

J. F. Monk (Editor)

CORRIGENDA
Bull. 107(1987)

p. 7, line 13: *erythrurus* not *erythurus; hypopyrrha* not *hypopyrra.*
line 15: *aradus* not *arada.*
p. 10, 15 lines from foot: *hypopyrrha* not *hypopyrra*
p. 11, 8 lines from foot: *aradus* not *arada*
p. 14, line 10: *melanonota* not *melanota*
p. 86, line 7: *L. glaucoides kumlieni* not *G. glaucoides kumlieni*
p. 97, line 9: *vauxi* not *vauxii*
p. 99, line 4: *perrotii* not *perrotti*
p. 106, References. Remsen & Taylor. Delete 1983.
p. 114, References. Bond, J. 1945 should be *Proc. Acad. Nat. Sci. Phil.* 97: 17–37
Carriker, M. A. Jr 1932 should be *Proc. Acad. Nat. Sci. Phil.* 84: 1–7
p. 152, 4 lines from foot: *cayanensis* not *cayannensis*
p. 153, lines 8 & 10: *cayanensis* not *cayannensis*
BAT FALCON: *Falco* not *Falcon*
p. 167, line 3: *hybrida* not *hybridus*
line 9: *temminckii* not *temmincki*
line 21: *celebense* not *celebensis*

OFFICERS OF THE BRITISH ORNITHOLOGISTS' CLUB PAST AND PRESENT

Chairmen

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Dr. P. R. Lowe	1920–1925	J. J. Yealland	1962–1969
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LIST OF MEMBERS: AMENDMENTS UP TO 31 DECEMBER 1987

(Compiled by Mrs. D. M. Bradley and R. E. F. Peal)

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STRONACH, N. R., Knockroe, Delgany, Co., Wicklow, Eire
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WOODS, R. W., 68 Aller Park Road, Newton Abbott, Devon TQ12 4NQA
YOUNG, L., P.O. Box 5, Child Beale Wildlife Trust, Lower Basildon, Reading, Berks RG8 9PF

Deaths

The Committee very much regrets to report the deaths of the following Members:—

Dr Salim ALI, D.Sc. (Member 1987)
Miss S. V. BENSON (Mrs Wynne Taylor) (Member 1948–1987)
Mr. S. CRAMP. O.B.E. (Member 1972–1987)

Resignations in respect of 1987:

N. K. ATKINSON, C. C. BARNARD, B. BLAKSTEEN, P. BROWN, A. K. DAVIES, A. B. DANEEL, O. ENDERS, P. D. HODGKINS, J. HORNBUCKLE, F. T. MORRIS, R. D. PRICE, Jnr., Dr. M. E. RICHARDSON, D. W. TAYLOR and P. D. W. TIMMS.

Removed from membership under Rule (4):

S. R. BIERLEY, B. ETHERIDGE, F. P. JENSEN, I. K. LANGFORD, R. W. MYATT, W. S. STRETTON, H. H. Y. TSAI, J. R. VAN OOSTEN and R. S. VOWLES.

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by J. H. Elgood)

All generic and specific names (of birds only) are indexed. New subspecific names are indexed in bold print under the generic and the specific names. Other subspecies of special interest are also included.

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Bulletin of the

British Ornithologists' Club

Edited by

Dr J. F. MONK

Volume 107 No. 1

March 1987

FORTHCOMING MEETINGS

Tuesday, 12 May 1987 at 6.15 pm for 7 pm in the South Side Suite, Imperial College, S.W.7, **Professor Fred Cooke** will speak on **"Birds of the Arctic"** and include some of his studies of Ross's Gull *Rhodostethia rosea*, Red-necked Phalarope *Phalaropus lobatus*, Semipalmated Sandpiper *Calidris pusilla* and Willow Ptarmigan *Lagopus lagopus*. Those wishing to attend should send their acceptance with a cheque for £5.40 a person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on Tuesday, 28 April, if possible*.

Professor Cooke, of Queen's University, Kingston, Ontario, is widely known for his work on birds and was one of the six speakers invited to address the plenary sessions at the XIX International Ornithological Congress in June 1986.

Tuesday, 9 June 1987 at 6.15 pm for 7 pm at the same venue, **Dr C. J. Feare** will speak on **"Man and the Starling Family"**. Those wishing to attend should send their acceptance with a cheque for £5.40 a person to reach the **HON. TREASURER** at **53 OSTERLEY ROAD, ISLEWORTH, MIDDLESEX TW7 4PW** by first post on Tuesday, 26 May, if possible*.

Dr Feare will discuss the relationship between starlings and man in different parts of the world. He needs little introduction and is the author of three articles in "A dictionary of birds" (1985), including "starling", and was joint convener of the symposium on "Birds as pests" at the XIX I.O.C. last June. He was to have spoken at the Club Meeting in January this year, which was cancelled because of the weather.

Tuesday, 28 July 1987 at 6.15 pm for 7 pm at the same venue, **Dr Patrick Osborne** will speak on **"Bird Life in Lesotho"**.

Speakers on dates later in the year which are still to be fixed include **Dr David W. Steadman** of the New York State Museum, the University of the State of New York, Albany, N.Y. (September) and **Dr David Nettleship** of the Canadian Wildlife Service, Bedford Institute of Oceanography, Dartford, Nova Scotia (October or November).

*It will normally be possible to take acceptances up to the weekend before the Meeting, but Members are asked to accept by 14 days before the Meeting if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before the Meeting.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 107 No. 1 Published: 20 March 1987

REPORT OF THE COMMITTEE FOR 1986

Meetings. Seven meetings were held in 1986, the usual 6 in January and alternate months thereafter and one in October, to take advantage of the opportunity of hearing Dr R. G. B. Brown whilst on a short visit to this country from Canada. The January meeting was in the Senior Common Room, Imperial College in Prince's Gardens, S.W.7 but it ceased to be available to the Club after that. Because of the difficulty at that time of making bookings at Imperial College sufficiently far ahead, the May meeting, with the Annual General Meeting, was held at the Snooker Centre, 121 Holborn, London. That Holborn was more central was not apparently reckoned a worthwhile advantage by members and, in view of the considerably higher cost of meals there and of unwelcome noise from the ventilation system, it was decided to take advantage of the Senior Common Room in Sherfield Building, Imperial College becoming available, by holding the other meetings in the year there. In November, 2 video films, lasting together almost an hour, were shown in the Lecture Theatre of the British Museum (Natural History) Cromwell Road, and we are most grateful to the Museum Authorities for allowing their specialized projection equipment to be used on that occasion. The films were followed by supper at the Imperial College with an address afterwards. At all meetings there was a hot buffet meal with service.

Meetings were well attended. The attendance of 106 in November for Mr J. H. R. Boswall was the greatest for the Club at a meeting for at least 50 years, perhaps ever, and the total in the year at Club meetings of 331 was the largest for 34 years.

The Committee met 6 times and the average attendance of the members was 80%.

Deaths. It is with very deep regret that the Committee reports the deaths of Captain J. Cunningham, Senior (Member 1927-1986), the Reverend R. C. Long, B.Th. (Member 1961-1986) and Mr G. Woosey (Member 1985-1986). The Club has been greatly indebted to Captain Cunningham, who in recent years gave the Club his copies of *Bulletin* back numbers, including Vol. 48, which had long been out of print and of which the Club did not possess a copy, even in its reference set.

Membership. In 1986 we welcomed 121 new members and 3 who rejoined; 3, who were in arrears at the end of 1985, paid up in 1986. We hope that in due course we will have the pleasure of welcoming the new members personally at meetings. Three resigned in respect of 1986 and 14 failed to pay their subscriptions during the year. At the year end paid-up membership was 566 (351 UK, 215 overseas), an increase of 107 in the year. The number of new members in the year and the size of membership at the year end were both the largest in the history of the Club. In the course of the year 7 members were struck off under Rule (4), having been in arrears with their subscriptions due in 1985.

Bulletin sales. Non-member subscriptions to the *Bulletin* fell by 9 in the year to 153 (23 UK, 130 overseas); 13 lapsed against 3 new and 1 which was restored after a brief absence.

Complete runs of the Bulletin back to Vol. 37 (1916/1917) are available from stock and a number of earlier volumes are being completed by reprinting. There is a considerable demand for back numbers, because of their value for reference, although sales fluctuate much from year to year and 1986 was a year in which they were below average.

The Bulletin. Volume 106 of the *Bulletin* contained 180 pages, considerably more than usual, thanks to a plentiful supply of a high standard of papers and to an at present buoyant income.

38 papers were presented by 61 authors, which emphasises the increasing fashion for as many individuals as possible getting their names into future bibliographies, a fashion which the Editor takes pains to discourage. The geographical coverage was Africa (11) 44 pp, South America (6) 40 pp, Pacific (5), Philippines (4), Indian Ocean and Subcontinent (4), South East Asia (3), West Indies (1), China (1), Atlantic Ocean (1), the Palaearctic (1) and one involving both the New World and the Himalayas.

Finance. The accounts for 1985 are not yet available. They will be tabled at the Annual General Meeting and published afterwards in the *Bulletin*. Members wanting copies before the Annual General meeting should notify the Hon. Secretary.

There was an increase in May 1986 in charges for printing the *Bulletin* of about 20% and for dispatch (excluding postage) of some 40%, the previous increase having been in January 1983.

Annual General Meeting. This is to be held on Tuesday, 12 May 1987, at 6 pm. The Committee hopes that as many members as possible will come so that they may make known their views on matters of interest to them regarding the Club.

ANNUAL GENERAL MEETING

The 1987 Annual General Meeting of the British Ornithologists' Club will be held in the South Side Suite, Imperial College, London S.W.7, on Tuesday, 12 May 1987 at 6 pm.

AGENDA

1. Minutes of the last Annual General Meeting (see *Bull. Brit. Orn. Cl.* 106: 41).
2. Report of the Committee and Accounts for 1986.
3. The *Bulletin*.
4. Election of Officers. The Committee proposes that:—
   (a) Mrs D. M. Bradley be re-elected Honorary Treasurer,
   (b) Mr R. E. F. Peal be re-elected Honorary Secretary,
   (c) Mrs Amberley Moore be elected a member of the Committee *vice* Mr D. R. Calder, who retires by rotation.
5. Any other business of which notice shall have been given in accordance with Rule (7).

By Order of the Committee,

RONALD E. F. PEAL *Honorary Secretary*

The seven hundred and sixty-eighth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7, on Tuesday, 21 October 1986, at 6.45 pm. The attendance was 23 Members and 9 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, Miss H. BAKER, Mrs A. J. BEAKBANE, K. F. BETTON, Mrs DIANA BRADLEY, D. R. CALDER, P. J. CONDER, S. J. FARNSWORTH, D. GRIFFIN, P. HOGG, A. J. KENCH, Dr J. F. MONK, Mrs AMBERLEY MOORE, R. G. MORGAN, Dr P. G. MORRIS, Mrs M. N. MULLER, R. E. F. PEAL, R. S. PRITCHETT, G. Z. ROWE, N. H. F. STONE, A. R. TANNER, P. B. TAYLOR and M. A. WALMSLEY.

Guests present were: Dr R. J. BAKER, Dr R. G. B. BROWN, Mrs J. CALDER, Mrs F. M. FARNSWORTH, Mrs ISABEL McCULLOCH, P. J. MOORE, C. A. MULLER, Mr and Mrs G. H. SEARLE.

Dr R. G. B. Brown gave an address illustrated with slides and an interesting discussion followed. He has sent the following abstract of his talk.

Seabirds as marine animals

Seabirds are virtually undefinable. The usually accepted members are Sphenisciformes/ Procellariiformes (penguins, albatrosses, fulmars, shearwaters and other petrels); Pelecaniformes (cormorants, pelicans, gannets, and tropic- and frigate-birds); and Lari-Limicolae (phalaropes, skuas, gulls, terns and auks). All that these have in common is that they are groups of birds which, independently, have become adapted to life at sea. Some of these independent adaptations are astonishingly similar: Great Auks and penguins, Little Auks and diving-petrels. Only the penguins have evolved as far as have marine mammals; they are the equivalents of seals, but a long way behind the highly specialised whales and dolphins.

Even so, seabirds of any kind are marine animals. It is a natural mistake to think of their biology only in terms of their highly active breeding seasons on land when, in actual fact, they spend three-quarters of their lives at sea. The boom in oceanographic research since the 1950s has allowed ornithologists to discover where they go, and why. The preferred pelagic habitat of the Grey Phalarope, for example, is in the ''fronts'' at the boundaries between water masses of different temperatures, where copepods and other marine zooplankton are trapped and concentrated at the surface. In the western Atlantic, migrating phalaropes are found along one of these ''fronts'' off Labrador on their way south from the Arctic; they feed at another very intense one in the Bay of Fundy; and they fly on to winter at a third, off northwest Africa. It is now possible to predict their pelagic distributions from satellite images of sea surface temperatures. Not all of these predictions are correct; but it is as important to discover the chracteristics of the ''fronts'' which the birds do *not* use, as those of the ones which they do. In this, marine ornithology is sometimes well ahead of orthodox oceanography.

Mr R. E. F. Peal followed with a brief talk, also with slides, on the XIX International Ornithological Congress in Ottawa in June 1986.

The seven hundred and sixty-ninth Meeting of the Club was held on Tuesday, 18 November 1986, at 6 pm in the Lecture Theatre of the British Museum (Natural History), Cromwell Road, London S.W.7. Mr J. H. R. Boswall showed 2 video films which he had brought from the People's Republic of China: ''A Paradise for Birds'', made in the southern Chinese province of Yunnan, with a sound track in Chinese, and ''The Azure-winged Magpie'', made in the eastern Chinese province of Shandong by Xu Zhen, for whom it won in 1984 the Golden Rooster award, and which had a sound track in English. Mrs Joyce Pope kindly arranged projection of the films, which concluded at 6.58 pm.

The company then proceeded to the Senior Common Room, Sherfield Building, Imperial College, where a hot buffet supper was served at 7.40 pm, after which Mr Boswall spoke on ''Ornithology in China'', which he had described as ''A rambling but reasonably accurate excursion into birds in the People's Republic: their conservation, use in traditional medicine and art, their role in personal and institutional aviculture and as objects of scientific enquiry''. In his address he gave a great deal of information, wittily and, despite his description, concisely, with slides and lengths of cine film to illustrate and amplify what he said. There were also contributions of value from others with expert knowledge of ornithology in China. The Meeting closed at 10.20 pm.

The attendance was 46 Members and 60 guests. Members present were: Revd. G. K. McCULLOCH *(Chairman)*, M. A. ADCOCK, R. C. BEECROFT, P. J. BELMAN, K. F. BETTON, J. H. R. BOSWALL, Mrs DIANA BRADLEY, D. R. CALDER,

S. E. CHAPMAN, S. J. W. COLES, P. J. CONDER, Dr H. Q. P. CRICK, A. K. DAVIES, Sir HUGH ELLIOTT, J. H. ELGOOD, S. J. FARNSWORTH, A. GIBBS, B. GRAY, D. GRIFFIN, P. HOGG, J. HORNBUCKLE, D. JOHNSTON, M. G. KELSEY, A. J. KENCH, R. H. KETTLE, J. KING, D. T. LEES-SMITH, J. W. P. MARTIN, Dr J. F. MONK, A. G. MOORE, Mrs AMBERLEY MOORE, R. G. MORGAN, Mrs M. N. MULLER, I. C. ORR, R. E. F. PEAL, G. ROWE, D. S. SALT, P. J. SELLAR, R. E. SHARLAND, Dr D. W. SNOW, A. R. TANNER, Dr D. H. THOMAS, W. H. TIMMIS, Dr A. TYE, C. E. WHEELER and Lieut-Col T. C. WHITE.

Guests present were: Mrs BERYL ADCOCK, Miss SALLY ALLPORT, Mrs E. BAKER, Dr M. BAKER, Mrs SALLY BETTON, D. BRADLEY, Miss PATRICIA BRADLEY, D. BROOKS, Mrs WENDY BROOKS, P. J. BULL, Mrs J. B. CALDER, J. CHAPPELL, Mrs P. CHAPPELL, Miss V. COX, Mrs F. M. FARNSWORTH, R. A. FROST, TAO FUZHONG, F. M. GAUNTLETT, J. H. C. GERSON, Mrs B. M. GIBBS, HELEN GILKES, Mrs MARGARET GREEN, CUI GUANGFAN, LUO HANG, Miss KAY HARRIS, K. J. HARRIS, H. J. HORSWELL, Mrs M. H. HORSWELL, Dr G. V. HUDSON, Mrs LOUISE JONES, E. R. G. KIDD, SHI KUN, J. S. MANKELOW, Mrs C. MANKELOW, Mrs ISABEL McCULLOCH, Miss GONG MEIGUI, Dr AMICIA MELLAND, Mrs DIANA MONK, P. J. MOORE, Miss SHIRLEY MORRELL, Mrs S. E. ORR, E. PATRICK, Mrs JOYCE POPE, I. PROUD, R. RANFT, D. RICHARDS, D. RILEY, Mrs C. RILEY, Mrs JULIA SALT, Mrs MARY SETON-WATSON, MA SHOUZENG, A. S. SLATER, Mrs MARGOT SLATER, Mrs BARBARA SNOW, S. STIRRUP, Mrs HILARY TYE, Mrs C. E. WHEELER, M. G. WILSON, WU YINGHAO and Miss MILLIE YUNG.

ERRATUM

In *Bull. Brit. Orn. Cl.* 106(4): 164-5 part of the text has regrettably been repeated and part omitted. We apologise to the author and print below the missing paragraphs:

Naurois, R. de & Bonaffoux, D. (1969). An important account of the little-known birds of the island of Sal, now an international airport.

Greer, A. E. (1976). An account of the giant lizard of the Desertas, *Macroscincus coctei* and its allies, which eat birds and their eggs.

Frade, F. (1976). A list of numerous birds collected in the period 1969-72, including the first Night Heron *Nycticorax nycticorax,* Little Bittern *Ixobrychus minutus,* and Starling *Sturnus vulgaris.* The supposedly-introduced Guinea-fowl is described as a new race *Numida meleagris bannermani* (discussed later).

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The affinities, breeding behaviour and distribution of Jouanin's Petrel *Bulweria fallax*

by W. R. P. Bourne

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In a recent note commenting on the strange occurrence of Jouanin's Petrel *Bulweria fallax* in Italy, Olson (1985) states that its breeding grounds remain unknown, and referring to an early comment of mine (Bourne 1960) that it

could be treated as a race of Bulwer's Petrel *B. bulwerii,* which it replaces in the Indian Ocean, questions it on the grounds that the difference in size of the two forms is too great, that there are (undescribed) skeletal differences, and that the remains of another large representative of the genus, *B. bifax,* have been found in Quaternary deposits on St Helena.

From Olson's (1975) original description, *B. bifax* appears to be an intermediate form of uncertain character, whose affinities cannot be determined reliably in the absence of the skull, and so it has little place in the discussion. While I am also by no means certain, in the absence of further information, how it is best to treat *B. fallax* and *B. bulwerii,* their difference in size is in fact smaller than that between some other populations which are commonly treated as forms of the same species, as for example the Snow Petrel *Pagodroma nivea,* not to mention mankind.

In regard to *B. fallax*'s breeding places being unknown but possibly located on islets off the south coast of Arabia, one out of 2 birds in the Royal Scottish Museum collected by Walker (1981) on the night of 5 December 1978 at the lights on Thamarit airfield, inside the coastal range of southern Oman, carries traces of down, which implies that they must have been fledging from nests somewhere in the inland deserts in this area, as already reported by Gallagher *et al.* (1984). I am indebted to Michael Gallagher for a photograph of another bird, which suggests traces of down on the flanks, taken by J. M. Paterson at night in December 1984 at Rima (18°53′N, 56°20′E) to the northeast of Thamarit.

While the records of *B. fallax* both from Lisianski Island, northwest of Hawaii, in September 1967 and from the head of the Adriatic Sea in November 1953, represent remarkable examples of vagrancy, it should be noted that observations by the members of the Royal Naval Bird-watching Society, summarised annually in *Sea Swallow,* show that the species regularly disperses into the Indian Ocean south of the equator during the northern winter, from where the more easterly wandering birds are likely to migrate north into the Pacific, and visit local seabird colonies; whereas the western Indian Ocean birds might well overshoot on their northward migration into the Red Sea (which is also visited by much more southerly species – Jennings 1985), and beyond into the Mediterranean and directly north into the Adriatic.

Giol's (1957) specimen of *B. fallax* referred to by Olson (1985) is by no means the only remarkable record of a Procellariiforme species from Italy. There have also been reports of the occurrence of a Wandering Albatross *Diomedea exulans* and a Cape Pigeon *Daption capense* of the Southern Ocean and even a Black-footed Albatross *D. nigripes* of the North Pacific (Cramp & Simmons 1977). While there is always a chance these arrivals may have been by unnatural means, it is possible that the vagrants which occasionally reach the Atlantic (Bourne 1967) may have difficulty surviving there, and so tend to drift with the westerly prevailing winds through the funnel formed by the Straits of Gibraltar, to come ashore on a coast frequented by innumerable hunters in Italy.

The most interesting features of these 2 records of extralimital vagrancy by *B. fallax* are, indeed, the dates, which suggest that they were young birds which went astray when they were trying to return to the breeding places for the first time late in the season; and the fact that 3 examples of this solitary

species are said to have occurred together in Italy. Possibly the other specimens, which were not preserved and may not have been seen well, really belonged to other species also affected by the same storm.

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Range extensions for some Bolivian birds, 3 (Tyrannidae to Passeridae)

by J. V. Remsen Jr, Melvin A. Traylor Jr & Kenneth C. Parkes

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This is the final paper in our 3-part series (Remsen *et al.* 1985, 1986) which documents range extensions on a departmental basis for Bolivian birds. The total number of new departmental records presented in the 3 papers, 397, is an increase of 11% in the total number of such records for Bolivia (data from Remsen & Traylor, in prep.). Records published herein are based primarily on specimens housed at the Carnegie Museum of Natural History (CM), the Field Museum of Natural History (FMNH), the Museum of Zoology, Louisiana State University (LSUMZ), the Los Angeles County Museum (LACM) and the Delaware Museum of Natural History (DMNH). Departamentos are abbreviated throughout: Beni (BE), Chuquisaca (CH), Cochabamba (CO), La Paz (LP), Oruro (OR), Potosí (PO), Santa Cruz (SC) and Tarija (TA). All secimens collected in BE, CO, LP and SC were collected by F., R. or J. Steinbach unless mentioned otherwise. All specimens at the 2 localities in SC west of Comarapa (see below) and all FMNH specimens from CH and TA were collected by Richard Crossin. All LACM specimens were collected by K. E. Stager or S. C. Bromley. All DMNH specimens were collected by C. Gregory Schmitt and Donna Cole Schmitt.

Elevations and provinces are not given for localities listed in Paynter *et al.* (1975) or for the following frequently mentioned localities: Ixiamas, 221 m, Prov. Iturralde (LP); Chipiriri, 300 m, Prov. Chapare (CO): 28 km W

Comarapa, 8400 ft, and 30 km W Comarapa, 8200 ft, Prov. Valle Grande (SC); and 108 km ENE Tarija, 6400 ft, Prov. Mendez (TA). Elevations for some localities in Paynter *et al.* (1975) are listed when these differ from those in the gazetteer or when multiple elevations are given in the gazetteer. Departmental records followed by an asterisk (*) are records for which Meyer de Schauensee (1966) listed the species for that department but for which we were unable to find a previously published record with locality, date, or museum reference.

Remsen *et al.* (1985, 1986) listed many Amazonian species that reach their southern limit in Prov. Ichilo, SC, a region of major zoogeographical significance. We here add to that list the following 19 species recorded herein for the first time from SC: *Hemitriccus zosterops, Todirostrum chrysocrotaphum, Terenotriccus erythurus, Laniocera hypopyrra, Myiozetetes granadensis, Piprites chloris, Gymnoderus foetidus, Cephalopterus ornatus, Microcerculus marginatus, Cyphorhinus arada, Turdus ignobilis, Ammodramus aurifrons, Arremon taciturnus, Saltator maximus, Cyanocompsa cyanoides, Euphonia minuta, Tangara schrankii, T. nigrocincta* and *Dacnis flaviventer.*

Remsen *et al.* (1985, 1986) also listed several species of humid montane cloudforest that reach their southern limit at the 2 localities west of Comarapa in SC (see above). Additions to this list recorded herein for the first time for SC are: *Mionectes striaticollis, Ochthoeca rufipectoralis, Haplospiza rustica, Catamblyrhynchus diadema, Anisognathus igniventris, Tangara vassorii, Diglossa cyanea, Myioborus melanocephalus* and *Conirostrum ferrugineiventre.* Although many species from humid montane habitats of the eastern slope of the Andes do reach SC west of Comarapa, at Cerro Hosane, or in the Samaipata region, most species that do extend as far south as Bolivia are known only as far south as Prov. Chapare, CO. Such species include several reported for the first time from CO herein and in Remsen *et. al* (1985, 1986): *Odontophorus speciosus, Otus ingens, Steatornis caripensis, Doryfera ludoviciae, Asthenes urubambensis, Pseudotriccus ruficeps, Myiotheretes erythropygius, Notiochelidon murina* and *Diglossa lafresnayii.*

Included among the records herein are the first for Bolivia for *Inezia subflava, Pseudocolopteryx flaviventris* and *Diuca diuca.*

SPECIES ACCOUNTS

ROUGH-LEGGED TYRANNULET *Phyllomyias burmeisteri*

CH: 16 km N Monteagudo, 5000 ft, 26 Nov 1972 (FMNH 294385).

TAWNY-RUMPED TYRANNULET *Phyllomyias uropygialis*

SC: 30 km W Comarapa, 8200 ft, 23-24 Dec 1972. TA: 67 km E Tarija, 7400 ft, 19 Feb 1973 (all FMNH, 294379-84).

SUIRIRI FLYCATCHER *Suiriri suiriri*

CH: 30 km SE Carandayti, 10 July to 11 Oct 1957 (LACM 35588-98).

YELLOW-BELLIED ELAENIA *Elaenia flavogaster*

SC: Buena Vista, 1909-1938 (CM, 18 specimens, FMNH 62646, 181433-34): Santa Cruz de la Sierra, 10 Sep 1909 (CM 33007-09, 43669); Propiadad Vado Hondo, 6 km S, 10 km E Comarapa, Río Pulquina Valley, 1527 m, 8 Feb 1979, coll. D. C. Schmitt (DMNH 65455).

SLATY ELAENIA *Elaenia strepera*

CO: Duraznillo, 27 Mar 1920 (CM 81091); TA: 80 km S Tarija, 6400-7000 ft, 14 Jan to 14 Feb 1973; 25 km NW Entre Ríos, 5400 ft, 2-6 Jan 1973; 108 km ENE Tarija, 22-25 Feb 1973; 67 km E Tarija, 7400 ft, 18-19 Feb 1973 (all FMNH, 294313-40). Females taken in Jan had either just finished laying or were preparing to lay; one Feb female was incubating, and 2 others had reduced ovaries; a juvenile was taken in Feb, and one male had begun post-nuptial moult. Similarly, specimens taken in the highlands of SC and CH between 2 Nov and 8 Jan were in

breeding condition (Bond & Meyer de Schauensee 1942). Thus, this species breeds in the semi-humid highlands of southern Bolivia and presumably northern Argentina (Zimmer 1941, Traylor 1979). If restricted to such a relatively small breeding range, the consequently small total population size would help to explain why lowland records of this migratory species are so few (e.g. see Zimmer 1941).

MOTTLE-BACKED ELAENIA *Elaenia gigas*
SC: Cerro del Amboró (Río Isamá), 19 Oct 1916 (CM 119361).

LESSER ELAENIA *Elaenia chiriquensis*
SC: Yungas de Samaipata, 16 Jan 1920 (CM 119525); Buena Vista, 11 Sep to 11 Oct 1923 (FMNH 62623-26); Santiago de Chiquitos, 3 Mar to 15 Apr 1973 (FMNH 295410-12).

WHITE-THROATED TYRANNULET *Mecocerculus leucophrys*
TA: 108 km ENE Tarija, 23 Feb 1973; 67 km E Tarija, 7400 ft, 17-19 Feb 1973; 80 km S Tarija, 6400-7000 ft, 15 Jan to 13 Feb 1973 (all FMNH, 294254-80).

WHITE-CRESTED TYRANNULET *Serpophaga subcristata*
CH: 30 km SE Carandayti, 7 July to 28 Aug 1957 (LACM 35619, -21, -23).

PALE-TIPPED TYRANNULET *Inezia subflava*
BE: Robert S. Ridgely discovered a specimen at the American Museum of Natural History (#792121) from Río Itenez, 30 Aug 1964, coll. Juan Cuello. This is the first record for Bolivia.

SUBTROPICAL DORADITO *Pseudocolopteryx acutipennis*
SC: Buena Vista, 5 Dec 1947 (LSUMZ 37969); Santiago de Chiquitos, Prov. Chiquitos, 700 m, 2 May 1973 (FMNH 296279). TA: 128 km SW Tarija, 8600 ft, 22 Jan 1973 (FMNH 294226).

WARBLING DORADITO *Pseudocolopteryx flaviventris*
SC: Buena Vista, 15 May 1915 (CM 51268). This is the first record for Bolivia and the northernmost locality for this presumed austral migrant.

TAWNY-CROWNED PYGMY-TYRANT *Euscarthmus meloryphus*
SC: Buena Vista, 16 June 1915, 14 Aug 1916 (CM 51374, 78997) and 20 Oct 1947 (LSUMZ 37966); Palmarito, 28 May 1918 (CM 119454); Santa Cruz de la Sierra, 28 July 1909 (CM 43627); Río Quizer on San Ramón-Concepción road, 300 m, Prov. Ñuflo de Chavez, 14 June 1984, coll. D. C. Schmitt (LSUMZ 124484); Santiago de Chiquitos, Prov. Chiquitos, 700 m, 2-17 May 1973 (FMNH 296276-78); c. 3 km by road S, c. 3 km W Santiago de Chiquitos, 700 m, Prov. Chiquitos, 20 July 1984, coll. J.V.R. (LSUMZ 124486); 24 km by road N Santiago de Chiquitos, along Río Tucavaca, 175 m, Prov. Chiquitos, 26 July 1984, coll. D. C. Schmitt (LSUMZ 124985).

STREAK-NECKED FLYCATCHER *Mionectes striaticollis*
SC: 28 km W Comarapa, 23-25 Mar 1973 (FMNH 294399-403).

McCONNELL'S FLYCATCHER *Mionectes macconnelli*
CO: Yungas El Palmar, 5 Mar 1940 (FMNH 181569): Huanoi, 2000 m, Prov. Chapare, 23 Sep 1960 (LSUMZ 37987).

SEPIA-CAPPED FLYCATCHER *Leptopogon amaurocephalus*
CH: 16 km N Monteagudo, 5000 ft, 26-28 Nov 1972 (FMNH 294396-97); 70 km SE Padilla, 3600 ft, 22 Nov 1972 (FMNH 294398).

SLATY-CAPPED FLYCATCHER *Leptopogon superciliaris*
SC: Buena Vista, 2 & 10 Sep 1914 (CM 50685, 50736); Cerro Amboró, Mar 1916 (CM 78832); Cerro Hosane, 11 & 26 Aug 1917 (CM 79330, 79997); Samaipata, 11 Mar 1920 (CM 119528). These are the southernmost localities for this species.

RUFOUS-HEADED PYGMY-TYRANT *Pseudotriccus ruficeps*
CO: Km 104, Prov. Chapare, 3200 m, 6 Sep 1960 and 19 Feb 1962 (LSUMZ 36330, 37962-63).

WHITE-BREASTED PYGMY-TYRANT *Myiornis albiventris*
SC: Cerro Hosane, 12 & 18 Aug 1917 (CM 119380, 79406); Santa Rita, 500 m, Prov. Cercado, 18 Dec 1961 (LSUMZ 36328). These are the southernmost records for this species.

WHITE-EYED TODY-TYRANT *Hemitriccus zosterops*
SC: Buena Vista, 11 Aug 1916 and 25 & 27 Sep 1917 (CM 119354, 79620-21, 79656).

BUFF-THROATED TODY-TYRANT *Hemitriccus rufigularis*
SC: Cerro Hosane, 24 Aug 1917 (CM 79440). This is the southernmost record for this very rare species.

OCHRE-FACED TODY-FLYCATCHER *Todirostrum plumbeiceps*
SC: Bermejo, 2 Nov 1919 (CM 119505).

COMMON TODY-FLYCATCHER *Todirostrum cinereum*
SC: Puerto Suarez, 1 & 10 Dec 1908 and 23 Jan 1909 (CM 31252, 31297, 31420).

GOLDEN-BROWED TODY-FLYCATCHER *Todirostrum chrysocrotaphum*
SC: Buena Vista, 21 Sep 1914 (CM 50875).

LARGE-HEADED FLATBILL *Ramphotrigon megacephala boliviana*
SC: Buena Vista, 9 Oct 1917 (CM 79763); Río Quizer on San Ramón-Concepción road, 300 m, Prov. Ñuflo de Chavez, 9-15 June 1984, coll. J.V.R. (LSUMZ 123316, 124454-55). Concerning the latter specimens, all were associated with bamboo thickets, as is typical for this species elsewhere (Parker 1984); this is the southeasternmost locality for this subspecies.

YELLOW-OLIVE FLYCATCHER *Tolmomyias sulphurescens*
CH: 16 km N Monteagudo, 5000 ft, 26 Nov 1972 (FMNH 294189-90); 70 km SE Padilla, 3600 ft, 21 Nov 1972 (FMNH 294194-97).

RUDDY-TAILED FLYCATCHER *Terenotriccus erythrurus*
SC: Buena Vista, 12 Aug 1913 and 28 Feb 1915 (CM 44002, 51197): Río Ichilo, 15 Feb 1937 (FMNH 181253-54).

CINNAMON FLYCATCHER *Pyrrhomyias cinnamomea*
TA: 108 km ENE Tarija, 23-27 Feb 1973; 80 km S Tarija, 6400 ft, 15 Jan 1973; 25 km NW Entre Ríos, 5400 ft, 4 Jan 1973 (all FMNH, 294166-79).

EASTERN WOOD-PEWEE *Contopus virens*
BE: Tumi Chucua, 10 Oct 1972, coll. D. L. Pearson (LSUMZ 71960; identification confirmed by A. R. Phillips); Pearson (1975) included this species in his list from Tumi Chucua without comment, although there was no previous record for Bolivia.

WESTERN WOOD-PEWEE *Contopus sordidulus*
CO: Yungas of Cochabamba, 2000 m, 15 Oct 1927 (FMNH 181229): Cochabamba, 2560 m, 10 Apr 1958 (LSUMZ 37989; identified as *C.s. saturatus* by Allan R. Phillips). Identification of the specimens from the lowlands of BE (Puerto Salinas), reported tentatively as this species by Gyldenstolpe (1945), require confirmation. North American *Contopus* from the lowlands of southern Peru are *C. virens* (Traylor 1979, Parker *et al.* 1982).

ALDER FLYCATCHER *Empidonax alnorum*
SC: Buena Vista, 5 Dec 1927 (CM 119996); Río Yapacaní, 20 Oct 1942 (LSUMZ 37937); San Javier, Prov. Ichilo, 20 Feb 1947 (LSUMZ 37936); 72 km ESE Monteagudo, 4000 ft, 5 & 7 Dec 1972 (FMNH 294149-50); 8 km N Gutierrez, 3000 ft, 8 Mar 1973 (FMNH 294151): Santiago de Chiquitos, Prov. Chiquitos, 700 m, 8 Mar 1973 (FMNH 295405). CH: 70 km ESE Padilla, 3600 ft, 18 Nov 1972 (FMNH 294152).

FUSCOUS FLYCATCHER *Cnemotriccus fuscatus*
CO: Chipiriri, 29 Nov 1962 (LSUMZ 36305). CH: 30 km SE Carandayti, 7 Oct 1957 (LACM 35622).

VERMILION FLYCATCHER *Pyrocephalus rubinus*
CH: 3 km S Carandayti, 3 & 11 Aug 1957 (LACM 35614-15); 30 km SE Carandayti, 19 July to 13 Oct 1957 (LACM 35610-13).

RUFOUS-BREASTED CHAT-TYRANT *Ochthoeca rufipectoralis*
SC: 30 km W Comarapa, 18-24 Dec 1972; 28 km W Comarapa, 23 Mar 1973 (all FMNH, 294026-42).

D'ORBIGNY'S CHAT-TYRANT *Ochthoeca oenanthoides*
CH: 27 km SE Camargo, 9600 ft, 5-6 Feb 1973 (FMNH 294022-24).

RED-RUMPED BUSH-TYRANT *Myiotheretes erythropygius*
CO: Incachaca, 3100 m, 30 July 1940 (FMNH 180938-39, LSUMZ 37863).

BLACK-BILLED SHRIKE-TYRANT *Agriornis montana*
TA: 80 km S Tarija, 6400 ft, 15 Jan 1973 (FMNH 294019).

GREY-BELLIED SHRIKE-TYRANT *Agriornis m. microptera*
CO: Choro, Prov. Ayopaya, 3500 m, 23 June 1953 (LSUMZ 37842).

MOUSE-BROWN SHRIKE-TYRANT *Agriornis murina*
CO: Cochabamba, June 1920 (CM 119591); this is the northernmost locality for this species. CH: 30 km SE Carandayti, 16 July to 7 Aug 1957 (LACM 35602-05).

BLACK-CROWNED MONJITA *Xolmis coronata*
CH: 30 km SE Carandayti, 8 July to 28 Aug 1957 (LACM 35522-25).

WHITE MONJITA *Xolmis irupero*
CH: 30 km SE Carandayti, 7 July to 4 Sep 1957 (LACM 35558-61); C. G. and D. C. Schmitt saw 3-4 near Carandayti on 11-12 May 1979.

SPOT-BILLED GROUND-TYRANT *Muscisaxicola maculirostris*
SC: Comarapa, 2500 m, 13 Oct 1926 (FMNH 180921). OR: J.V.R. saw one at Lago Uru-Uru, 29 Jan 1977; 6 km NE Laguna, foothills of Nevado Sajama, 4200 m, Prov. Sajama, 4 Dec 1984, coll. C. G. Schmitt (LSUMZ 124300).

CINNAMON-BELLIED GROUND-TYRANT *Muscisaxicola capistrata*
CO: Colomi, 22 Aug 1921 (CM 85547) and 10 June 1936 (FMNH 180904): Tiraque, 3297-3500 m, 7-9 Aug 1928 (FMNH 180890-900, CM 120065, LSUMZ 37851): Cuchicancha, 3085 m, 29 July 1937 (FMNH 180901-02); Incachaca, 3100 m, 30 July 1940 (FMNH 180903).

CINEREOUS GROUND-TYRANT *Muscisaxicola cinerea*
OR: Oruro, 21 Dec 1921 (CM 119753).

BLACK-FRONTED GROUND-TYRANT *Muscisaxicola frontalis*
LP: 5.4 km by road W hydroelectric dam on Zongo Valley road, Prov. Murillo, 19 July 1981, coll. J.V.R. (LSUMZ 102460); Río Choquekkota Valley, 8 km from jct. Calacoto-Palca road on road to Mina San Francisco, 4025 m, Prov. Murillo, 15 Aug 1981, coll. T. S. Schulenberg (LSUMZ 101480).

ANDEAN RUFOUS-BACKED NEGRITO *Lessonia oreas*
CO: Cochabamba, 2500-2800 m, 1 June to 5 Oct 1920, 1922 (CM, 11 specimens, LSUMZ 37857); Vacas, 3800 m, 12-24 Aug 1937 (FMNH 180929-33).

SOUTHERN RUFOUS-BACKED NEGRITO *Lessonia rufa*
SC: Pulquina, 10 May 1938 (LSUMZ 37859).

CINEREOUS TYRANT *Knipolegus striaticeps*
CH: 30 km SE Carandayti, 19 July to 22 Aug 1957 (LACM 35570-77).

HUDSON'S BLACK-TYRANT *Knipolegus hudsoni*
LP: Caranavi, 800 m, 4 Aug 1980, coll. J.V.R. (LSUMZ 96312). SC*: Buena Vista, 24 May to 25 July, 1915-1927 (CM 51312, 79139, 120008, 120022, FMNH 181037); Río Dolores, 17 May 1916 (CM 119343): Pampa de la Isla, 16 May 1918 (CM 80056, 80058); Santa Cruz de la Sierra, 11 July to 16 Sep 1909 (CM 43610, 32856, 43630, 33031); 2.5 km by road N, 8 km by road E Montero, Prov. Santiesteban, 300 m, 8 July 1984, coll. D. C. Schmitt (LSUMZ 125871); 1 km N, 2 km E YPFB Refinery, c. 10 km S Santa Cruz, 425 m, Prov. Ibañez, 18 Aug 1984, coll. J.V.R. (LSUMZ 124321).

SPECTACLED TYRANT *Hymenops perspicillata*
CH: 30 km SE Carandayti, 10 Aug 1957 (LACM 35601).

PIED WATER-TYRANT *Fluvicola pica*
CH: 30 km SE Carandayti, 14 July 1957 (LACM 35555); 35 km SW Carandayti, 17 Aug 1957 (LACM 35556).

CLIFF FLYCATCHER *Hirundinea ferruginea*
TA: 118 km SW Tarija, 8600 ft, 27 Jan 1973 (FMNH 294187).

CINEREOUS MOURNER *Laniocera hypopyrra*
SC: Buena Vista, 12 Aug 1913 and 27 Feb 1915 (CM 44001, 51183). This is presumably the basis for the listing of this species for SC by Snow (1979).

LESSER KISKADEE *Pitangus lictor*
SC: Buena Vista, 28 Jan 1926 (CM 119919); 24 km by road north of Santiago de Chiquitos, along Río Tucavaca, 175 m, Prov. Chiquitos, 24-31 July 1984, coll. J.V.R. and C. G. Schmitt (LSUMZ 123204, 124374-75). Except for Narosky's (1983) recent record from Argentina, the Tucavaca record is the only one outside the Amazon drainage south of the Amazon.

RUSTY-MARGINED FLYCATCHER *Myiozetetes cayanensis*
CO: Chipiriri, 30 Nov 1962 (LSUMZ 36279).

GREY-CAPPED FLYCATCHER *Myiozetetes granadensis*
SC: Río Ichilo, 30 Jan 1937 (FMNH 181171).

GOLDEN-CROWNED FLYCATCHER *Myiodynastes chrysocephalus*
SC: Cerro del Amboró, 19 Oct 1916 (CM 94256); Cerro Hosane, 16 Aug 1917 (CM 79365). TA: 25 km NW Entre Ríos, 5400 ft, 2 & 6 Jan 1973 (FMNH 294114-17); 108 km ENE Tarija, 23 Feb 1973 (FMNH 294118). These are the southernmost records for this species.

FORK-TAILED FLYCATCHER *Tyrannus savanna*
CH: 30 km SE Carandayti, 21-22 Sep 1957 (LACM 35520-21).

WHITE-NAPED XENOPSARIS *Xenopsaris albinucha*
SC: Buena Vista, 25 May 1915 (CM 51317); Santa Cruz de la Sierra, 13 May 1918 (CM 80055); Palmarito, 22 May 1918 (CM 119450). This species was known from SC only from the sight record of Parker & Rowlett (1984).

GREEN-BACKED BECARD *Pachyramphus viridis*
CH: 30 km SE Carandayti, 4 Oct 1957 (LACM 35760).

WING-BARRED MANAKIN *Piprites chloris*
SC: Río Surutú, 10 Aug 1910 (CM 43759); Buena Vista, 5 June 1944 (LSUMZ 37826).

FIERY-CAPPED MANAKIN *Machaeropterus pyrocephalus*
LP: Ixiamas, 11 Apr 1961 (LSUMZ 37832).

BLUE-BACKED MANAKIN *Chiroxiphia pareola*
CH: 16 km N Monteagudo, 5000 ft, 26 Nov 1972 (FMNH 294017). This is the southernmost record for this species in the Andes.

BARE-NECKED FRUIT-CROW *Gymnoderus foetidus*
SC*: Buena Vista, 28 Aug 1914 (CM 50665) and 20 Nov 1947 (LSUMZ 36154: exchanged by G. H. Lowery to Estación Biologia de Rancho Grande, Venezuela): Río Surutú, 17 Feb 1923 (CM 119817); Guaitú, Prov. Ichilo, 25 Sep 1943 (LSUMZ 36155).

AMAZONIAN UMBRELLABIRD *Cephalopterus ornatus*
SC: Buena Vista, 13 July 1913 (CM 43995); Río Surutú, 10 July 1948 (LSUMZ 37816).

WHITE-WINGED SWALLOW *Tachycineta albiventer*
LP: Caranavi, 15 July 1963 (LSUMZ 38025).

WHITE-RUMPED SWALLOW *Tachycineta leucorrhoa*
SC: Buena Vista, 1 Aug (LSUMZ 38025) and 10 Oct 1922 (CM 94619-20) and 6 Oct 1923 (FMNH 62531); Warnes, 1 Aug 1922 (CM 94593); Santa Cruz de la Sierra, 25 Sep 1909 (CM 43675); 6 km by road W Santa Rosa de Roca, 450 m Prov. Velasco, 12 July 1984, coll. C. G. Schmitt (LSUMZ 124678).

BROWN-CHESTED MARTIN *Progne tapera*
CO: Capinota, 5 Nov 1937 (FMNH 180747). CH: 30 km SE Carandayti, 11 Oct 1957 (LACM 35828); 6 km SE Carandayti, 29 Sep 1957 (LACM 35825-27).

PURPLE MARTIN *Progne subis*
CO: Cochabamba, 2570 m, 7 Sep 1948 (LSUMZ 38028; *P.s. arboricola*). CH: 30 km SE Carandayti, 9 Oct 1957 (LACM 35823). These are the southernmost records for this species in western South America.

BROWN-BELLIED SWALLOW *Notiochelidon murina cyanodorsalis*
CO: Choro, Prov. Ayopaya, 3500 m, 12 & 18 Sep 1953 (FMNH 217798-801, LSUMZ 38029); Incachaca, 7 Nov 1921 (CM 86005).

TAWNY-HEADED SWALLOW *Alopochelidon fucata*
SC: Buena Vista, 12 Dec 1944 (LSUMZ 38032).

BARN SWALLOW *Hirundo rustica*
CO: Cochabamba, 4 & 9 Nov 1940 (LSUMZ 38033, FMNH 180771).

SEDGE WREN *Cistothorus platensis*
TA: 67 km E Tarija, 8000 ft, 17 Feb 1973 (FMNH 294446-47).

FAWN-BREASTED WREN *Thryothorus guarayanus*
LP: Ixiamas, 16 Apr 1961 (LSUMZ 38049).

NIGHTINGALE WREN *Microcerculus marginatus*
SC: Río Yapacaní, 10 Sep 1914 (CM 50733): Río Surutú, Apr-Oct 1917 (CM, 8 specimens); Cerro Hosane, 21 Aug and 3 Sep 1917 (CM 79423, 79493).

MUSICIAN WREN *Cyphorhinus arada*
SC: Buena Vista, 28 Jan 1926 (FMNH 180855,-57); Río Surutú, May-Nov, 1910-1938 (CM, 8 specimens, FMNH 180856); Río Yapacaní, 21 Sep 1914 (CM 50870) and 22 Dec 1936 (FMNH 180858); Isamá, 25 July 1943 (LSUMZ 36447).

SWAINSON'S THRUSH *Catharus ustulatus*
CO: Pojo, 5 Nov 1926 (CM 120180); Totora, 2500-2900 m, 5-15 Nov 1926; Tin-Tin, 25 Nov 1937; Cuchicanchi, 10 Nov 1939; Aiquile, 17 Nov 1936; Aduana (Incachaca), 5 Dec 1939 (all FMNH, 181663-73); Villa Tunari, 28 Nov 1960 (LSUMZ 38078).

PALE-EYED THRUSH *Platycichla leucops*
CO: Incachaca, 23 Aug 1921 (CM 119689).

GLOSSY-BLACK THRUSH *Turdus serranus*
SC: 30 km W Comarapa, 19-24 Dec 1972 (FMNH 294516-22).

HAUXWELL'S THRUSH *Turdus hauxwelli*
SC*: Cercado, 450 m, 15 Apr 1937 (FMNH 181597); San Carlos, 9 Oct 1938 (FMNH 181598).

BLACK-BILLED THRUSH *Turdus ignobilis*
CO: Villa Tunari, 23 Nov to 2 Dec 1960 (LSUMZ 36466, 36472, 38085). SC: Buena Vista, 4 Nov 1914 (CM 50964) and 14 Jan 1943 (LSUMZ 38087); Río Surutú, 12 Feb 1928 (CM 120005); Río Palometas, 16 Dec 1917 (CM 119441).

WHITE-NECKED THRUSH *Turdus albicollis contemptus*
CO: Alto Palmar, 3 Dec 1954 (LSUMZ 38079).

YELLOWISH PIPIT *Anthus lutescens*
SC: Buena Vista, most months, 1914-1947 (CM, 10 specimens, FMNH 181702-03, LSUMZ 38100-01); Nueva Moka, 4 Apr 1938 (FMNH 181700); San Carlos, 22-23 Oct 1938 (CM 125105, FMNH 181701); San Javier, Prov. Ichilo, 20 Feb 1947 (LSUMZ 36479); Santa Cruz de la Sierra, 15 Jan to 22 Sep 1909 (CM 33023, 32847, 33041); Puerto Suarez, 26-27 Jan 1909 (CM 31436, 31439). CH: C. G. and D. C. Schmitt saw 1 at Carandayti on 12 May 1979.

CORRENDERA PIPIT *Anthus correndera*
LP: Mt Illampu, Finca Tacamarca, 4070 m, 11 Aug 1938 (FMNH 183910): Finca Capiri, 12 km W Viacha, 3900 m, Prov. Ingavi, 2-3 July 1980, coll. J.V.R. and S. W. Cardiff (LSUMZ 95462-63, 96642-50). CO: Cochabamba, 2570 m, 15 July 1954 (LSUMZ 38102).

RED-EYED VIREO *Vireo olivaceus chivi*
CH: 30 km SE Carandayti, 19 Oct 1957 (LACM 35872); 16 km N Monteagudo, 5000 ft, 26-27 Nov 1972 (FMNH 294618-19).

GRASSLAND SPARROW *Ammodramus humeralis*
LP: Ixiamas, 10 & 16 Apr 1961 (LSUMZ 36877, 38482).

MOURNING SIERRA-FINCH *Phrygilus fruticeti*
CH: 27 km SE Camargo, 9600 ft, 4-7 Feb 1973 (FMNH 294993-98); 38 km by road S Padcoyo, 3275 m, Prov. Nor Cinti, 13 Nov 1984, coll. C. G. and D. C. Schmitt (LSUMZ 123081, 124873-75).

ASH-BREASTED SIERRA-FINCH *Phrygilus plebejus*
CH: 27 km SE Camargo, 9600 ft, 6-7 Feb 1973. TA: 128 km SW Tarija, 8600 ft, 21-23 Jan 1973 (all FMNH, 294999-5007); 38 km by road S Padcoyo, 3275 m, Prov. Nor Cinti, coll. C. G. and D. C. Schmitt (LSUMZ 123082-83).

BAND-TAILED SIERRA-FINCH *Phrygilus alaudinus*
TA: 80 km S Tarija, 6400 ft, 17 Jan 1973 (FMNH 295008-10).

COMMON DIUCA-FINCH *Diuca diuca*
PO: Oploca, 10,300-11,000 ft, 24 Feb 1938 and 22-29 June 1936, coll. M. A. Carriker (Academy of Natural Sciences 134782-87,-89,-90,-91,-93,-94), These are the first records for Bolivia and the northernmost for this species.

SLATY FINCH *Haplospiza rustica*
SC: 30 km W Comarapa, 23 Dec 1972 (FMNH 295011).

GREY-CRESTED FINCH *Lophospingus griseocristatus*
TA: 128 km W Tarija, 8600 ft, 21-25 Jan 1973 (FMNH 295012-24).

BOLIVIAN WARBLING-FINCH *Poospiza boliviana*
LP: 2.5 km by road S Mecapaca, c. 26 km by road S Calacoto, 3050 m, Prov. Murillo, 17 July 1981, coll. J.V.R. (LSUMZ 102886); Huajchilla, 18 km by road S Calacoto, 3125 m, Prov. Murillo, 21 July 1981, coll. S. M. Lanyon (LSUMZ 101569). These localities are the northernmost for this species; it is doubtful that suitable habitat exists farther north, because these localities are the northernmost known outposts of the arid intermontane, columnar cactus-desert scrub habitat of the Bolivian Andes.

RUSTY-BROWED WARBLING-FINCH *Poospiza erythrophrys*
SC: Comarapa, 11 Oct 1926 (CM 120187). This species was known from SC only from the sight records of Parker & Rowlett (1984).

BLACK-AND-RUFOUS WARBLING-FINCH *Poospiza nigrorufa*
CO: Pocona, 4 Dec 1926 (FMNH 183695-96).

GREENISH YELLOW-FINCH *Sicalis olivascens*
CH: 27 km SE Camargo, 9600 ft, 5-7 Feb 1973 (FMNH 294972-78).

GRASSLAND YELLOW-FINCH *Sicalis luteola*
CO: Arani, 2752 m, 5-28 Dec 1940 (FMNH 183035-37).

GREAT PAMPAS-FINCH *Embernagra platensis*
SC: Comarapa, 2500 m, 15 & 26 Oct 1926 (CM 120172, FMNH 183972-75); 1 km N, 8 km W Comarapa, c. 2450 m, 9 Sep 1984, coll. J. A. Cook (LSUMZ 123447).

BLUE-BLACK GRASSQUIT *Volatinia jacarina*
CO: Chipiriri, 10 Nov 1962 (LSUMZ 38422-23).

DOUBLE-COLLARED SEEDEATER *Sporophila caerulescens*
SC*: Pulquina; San Carlos; Cercado, 450 m; Buena Vista; Río Surutú; Río Yapacaní; Palmarito; Santa Rita, 500 m, Prov. Cercado; Angostura, Prov. Florida; various localities in Prov. Chiquitos (various dates; CM, 33 specimens, FMNH 15, LSUMZ 5).

RUDDY-BREASTED SEEDEATER *Sporophila (minuta) hypoxantha*
CO: Chipiriri, 20 Oct 1962 (LSUMZ 38406-07).

DULL-COLOURED SEEDEATER *Sporophila obscura*
CH: 30 km SE Carandayti, 22 July 1957 (LACM 35737).

LESSER SEEDFINCH *Oryzoborus angolensis*
CO: Yungas de Cochabamba, 2000 m, 20 & 24 Oct 1927 (FMNH 182902,-04, CM 120450).

PECTORAL SPARROW *Arremon taciturnus*
SC: Río Surutú, 9 Aug 1910, 12 Oct 1917 and 4 May 1919 (CM 43757, 79796, 80618-19); Río Yapacaní, Feb-Sep, 1913-1915 (CM, 9 specimens); Cerro Hosane, 22 Aug 1917 (CM 79430).

FULVOUS-HEADED BRUSH-FINCH *Atlapetes fulviceps*
TA: 80 km S Tarija, 108 km ENE Tarija, and 67 km E Tarija, 6400-7400 ft, 14 Jan to 23 Feb 1973; 25 km NW Entre Ríos, 5400 ft, 2 & 4 Jan 1973 (all FMNH, 295064-84).

MANY-COLOURED CHACO-FINCH *Saltatricula multicolor*
SC: Guanacos, 26 Sep 1915 (CM 51543); Buena Vista, 6 Aug 1929 (CM 120552); Santa Elena, 12 & 14 July 1973 (FMNH 296530-31); these are the northernmost localities for this species. CH: 30 km SE Carandayti, 23 July-30 Aug 1957 (LACM 35701-04).

RED-CRESTED FINCH *Coryphospingus cucullatus*
CH: 70 km SE Padilla, 3600 ft, 19-28 Nov 1972 (FMNH 295037-40).

RED-CRESTED CARDINAL *Paroaria coronata*
CH: 30 km SE Carandayti, 22 July to 12 Oct 1957 (LACM 35724-26).

YELLOW-BILLED CARDINAL *Paroaria capitata*
SC: Puerto Suarez, 2-16 Dec 1908 (CM, 5 specimens).

BUFF-THROATED SALTATOR *Saltator maximus*
SC: Buena Vista, 6 June 1910 (CM 38294), 12 June 1938 (FMNH 182733-34) and 10 July 1948 (LSUMZ 36781); Río Yapacaní, 16 Jan, 1 Feb and 14 Sep 1914 (CM 44394, 44600, 50793) and 17 Feb 1915 (CM 51141).

GREYISH SALTATOR *Saltator coerulescens*
CO: Villa Tunari, 30 Nov 1960 (LSUMZ 38377).

BLUE-BLACK GROSBEAK *Cyanocompsa cyanoides*
SC: Río Yapacaní, 19 Sep 1914, 18-21 Feb 1915 (CM 50829, 51143-45); Río Surutú, 28 Sep, 8-10 Oct and 16 Nov 1917 (CM 79682, 79722, 79778, 119435) and 15 Aug 1938 (FMNH 182805); Buena Vista, 18 May 1944 (LSUMZ 38392); San Carlos, 6 Oct 1938 (CM 125098-99).

PLUSH-CAPPED FINCH *Catamblyrhynchus diadema*
SC: 30 km W Comarapa, 20 & 22 Dec 1972 (FMNH 294903-04).

BLACK-EARED HEMISPINGUS *Hemispingus melanotis*
SC: Yungas de Samaipata, 24 Nov 1919 (CM 119521). This is the southernmost record for this species.

ORANGE-HEADED TANAGER *Thlypopsis sordida*
CH: 70 km SE Padilla, 3600 ft, 17-21 Nov 1972 (FMNH 294819-26).

RUST-AND-YELLOW TANAGER *Thlypopsis ruficeps*
TA: 108 km ENE Tarija, 22-27 Feb 1973 (FMNH 294827-33).

BLACK-GOGGLED TANAGER *Trichothraupis melanops*

CH: 70 km SE Padilla, 3600 ft, 20 Nov 1972; 16 km N Monteagudo, 5000 ft, 24-27 Nov 1972 (FMNH 294811-15). This is the southernmost record in the Bolivian Andes for this species, which is now known from Salta, Argentina (Olrog 1979).

WHITE-WINGED TANAGER *Piranga leucoptera*

SC: Cerro Hosane, 14 & 18 Aug 1917 (CM 79357, 79407). This is the southernmost record for this species.

SCARLET-BELLIED MOUNTAIN-TANAGER *Anisognathus igniventris*

SC: 30 km W Comarapa, 19 & 20 Dec 1972 (FMNH 294773).

FAWN-BREASTED TANAGER *Pipraeidea melanota*

SC: Río Surutú, 8 Aug 1910 (CM 43753); Buena Vista, 30 July 1916 (CM 78964) and 15 Dec 1936 (FMNH 182139); San Carlos, 26 Oct 1938 (FMNH 182140): Cerro Hosane, 6 Aug 1917 (CM 79261, 119374); Comarapa, 23 Sep 1926 (FMNH 182141); 28 km W Comarapa, 8400 ft, 25 Mar 1973 (FMNH 294757); 72 km ESE Monteagudo, 5000 ft, 30 Nov 1972 (FMNH 294758). CH: 16 km N Monteagudo, 5000 ft, 24 & 26 Nov 1972 (FMNH 294759-60).

BLUE-HOODED EUPHONIA *Euphonia musica*

CO: Pocona, 20 Feb 1927 (LSUMZ 38173); Yungas de Cochabamba, 2000 m, 20 July to 15 Dec 1927 (FMNH 182040-44).

BRONZE-GREEN EUPHONIA *Euphonia mesochrysa*

SC: Storer (1970) reported the first specimen for SC. The details of this record are as follows: Cerro Hosane, 11 Aug 1917 (CM 79324).

WHITE-VENTED EUPHONIA *Euphonia minuta*

SC: Río Surutú, 9 Aug and 7 Sep 1910 (CM 38333, 38420) and 27 Sep 1917 (CM 79659); Río Yapacaní, 1 & 19 Sep 1914 (CM 50682, 50837) and 21 Oct 1942 (LSUMZ 38189); Buena Vista, 20 July 1925 (FMNH 182069).

RUFOUS-BELLIED EUPHONIA *Euphonia rufiventris*

CO: Alto Palmar, 28 Feb 1940 and 5 Dec 1949 (LSUMZ 38172-73); Yungas el Palmar, 5 Mar to 25 May 1940 (FMNH 182111, & 14-16).

GREEN-AND-GOLD TANAGER *Tangara schrankii*

SC*: Storer (1970) reported the first records for SC. The details are as follows: Río Yapacaní, 18 Aug 1913, 30 Aug and 12 Sep 1914 (CM 44010, 50671, 50754-55); Río Surutú, 21 Sep 1917 and 31 Aug 1938 (CM 79548-50, 125093); Buena Vista, 2 July 1916 (CM 78934); San Carlos, 20 Oct 1938 (CM 125104).

SAFFRON-CROWNED TANAGER *Tangara xanthocephala*

SC: Cerro Hosane, 18 Aug 1917 (CM 79397); Samaipata, 8 Mar 1920 (CM 80933). These are the southernmost localities for this species.

BAY-HEADED TANAGER *Tangara gyrola*

SC: Río Yapacaní, 4 & 12 Sep 1914 (CM 50699, 50743); Cerro Hosane, 24 Sep 1917 (CM 79547). The listing for SC by Storer (1970) is presumably based on these specimens, the southernmost for this species.

MASKED TANAGER *Tangara nigrocincta*

SC: Storer (1970) reported the first record for SC. The details are as follows: Río Surutú, 18 Mar 1916, 21 Sep 1917 and 6 Sep 1910 (CM 119339, 79547, 43789).

BLUE-AND-BLACK TANAGER *Tangara vassorii*

SC: 28 km W Comarapa, 21-24 Mar 1973; 30 km W Comarapa, 22 Dec 1972 (FMNH 294761-72).

YELLOW-BELLIED DACNIS *Dacnis flaviventer*

SC: Río Surutú, 6 Aug 1910 (CM 43748). The listing for SC by Storer (1970) is presumably based on this specimen, the southernmost for this species.

GLOSSY FLOWER-PIERCER *Diglossa lafresnayii*

CO: Cerro San Benito, 30 Oct 1921 (CM 119733); Incachaca, 10 Dec 1939 (FMNH 181772) and 15 Jan 1940 (LSUMZ 38152); Km 104, 3200 m, Prov. Chapare, Sep & Feb, 1960 & 1962 (LSUMZ 36619-23, 38150-51).

CARBONATED FLOWER-PIERCER *Diglossa carbonaria*

SC: 30 km W Comarapa, 20-23 Dec 1972 (FMNH 294879-87). This is the southernmost record for this species.

MASKED FLOWER-PIERCER *Diglossa cyanea*

SC: 28 km W Comarapa, 21-22 Mar 1973; 30 km W Comarapa, 19-23 Dec 1972 (all FMNH, 294889-902).

SLATE-THROATED REDSTART *Myioborus miniatus*
SC: Cerro Amboró, 21 Oct 1916 (CM 79036): Cerro Hosane, 11-21 Aug 1917 (CM 79319-22, 79422).

SPECTACLED REDSTART *Myioborus melanocephalus*
SC: 28 km W Comarapa, 22 & 25 Mar 1973 (FMNH 294642-43).

PALE-LEGGED WARBLER *Basileuterus signatus*
TA: 108 km ENE Tarija, 23-27 Feb 1973 (FMNH 294666-79).

WHITE-BROWED CONEBILL *Conirostrum ferrugineiventre*
SC: 30 km W Comarapa, 17-24 Dec 1973 (FMNH 294708-11); 28 km W Comarapa, 21 Mar 1973 (FMNH 294712).

DUSKY-GREEN OROPENDOLA *Psarocolius atrovirens*
SC: Cerro Hosane, 14-31 Aug 1917 (CM 79348, 79469-72); Cerro Amboró, 22-23 Oct 1916 (CM 79049-57, 119364).

GOLDEN-WINGED CACIQUE *Cacicus chrysopterus*
TA: 30 km NW Yacuiba, 2700 ft, 31 Dec 1972 (FMNH 294725-26); 67 km E Tarija, 7400 ft, 17 Feb 1973 (FMNH 294727).

TROUPIAL *Icterus icterus*
CH: 30 km SE Carandayti, 14 July 1957 (LACM 35642).

EPAULET ORIOLE *Icterus cayanensis*
CH: 70 km SE Padilla, 3600 ft, 22-23 Nov 1973 (FMNH 294730-31).

CHESTNUT-CAPPED BLACKBIRD *Agelaius ruficapillus*
CH: 30 km SE Carandayti, 7 Aug 1957 (LACM 35657).

SCARLET-HEADED BLACKBIRD *Amblyramphus holosericeus*
SC: Palmarito, 20 May and 5 June 1918 (CM 80070-03, 119478); 2.5 km by road N, 8 km by road E Montero, 300 m, Prov. Santiesteban, 9 July 1984, coll. C. G. Schmitt (LSUMZ 125555).

BAY-WINGED COWBIRD *Molothrus badius*
SC: (*M.b. bolivianus*) Samaipata, 27 Nov 1919 (CM 80830); 6 km S, 10 km E Comarapa, Río Pulquina Valley, 1527 m, 11 Feb 1979, coll. C. G. and D. C. Schmitt (DMNH 65511-13); 2.5 km N Tambo, Río San Isidro (Río Pulquina) Valley, 1500 m, Prov. Caballero, coll. C. G. and D. C. Schmitt (LSUMZ 125589-600). CH: 27 km SE Camargo, 9600 ft, 4 & 7 Feb 1973 (FMNH 294727-28). SC: (*M.b. badius*) Curiche (on Río Grande c. 12 km ENE Cabezas), 17 Aug 1909 (CM 43645); 8 km N Gutierrez, 3000 ft, 10 Mar 1973 (FMNH 294721); 10 km by road E Gutierrez, Laguna Caucaya, 875 m, Prov. Cordillera, 13 & 19 Feb 1984 (LSUMZ 125601-02). These 2 subspecies are separated by elevation.

SCREAMING COWBIRD *Molothrus rufoaxillaris*
SC: Guanacos, 27 Sep 1915 (CM 51545). This is the northernmost locality known for this species.

GIANT COWBIRD *Scaphidura oryzivora*
LP: Seven were seen by J.V.R. at Caranavi, 800 m, 4 Aug 1980.

BOBOLINK *Dolichonyx oryzivorus*
SC: Buena Vista, 28 Mar 1912 (CM 43936); Río Palometas, 2 Dec 1917 (CM 119440); Valle de Tucabaca, 650 m, 8 & 10 Apr 1973 (FMNH 296411-12); La Colina de Santiago, 3 Apr 1973 (FMNH 296413); Puerto Suarez, 24 Nov 1908 (CM 31284-88, 31327).

YELLOW-BELLIED SISKIN *Carduelis xanthogastra*
CO: Colomi, 21 Aug 1921 (CM 119679).

YELLOW-RUMPED SISKIN *Carduelis uropygialis*
LP: Esperanza, 22 & 24 Oct 1941 (FMNH 182934-35).

HOUSE SPARROW *Passer domesticus*
CO: Cochabamba, 30 Nov 1953 and 8 Jan 1961 (LSUMZ 38322, 36776). SC: Santa Cruz, 5 Jan 1986, coll. Carlos E. Quintela (LSUMZ 127153–155); known previously from SC from the sight records of Parker & Rowlett (1984). This species has been present in southern Bolivia since at least 1936 (Bond & Meyer de Schauensee 1942, Meyer de Schauensee 1966, cf. Serrano & Cabot 1983).

We would also like to add the following to our previous listings (Remsen *et al.* 1986) of Bolivian woodpecker records:

BLACK-BODIED WOODPECKER *Dryocopus schulzi*
Short (1982) reported the first records of this species for Bolivia. The details (from L. L. Short)

are as follows: CH: Monteagudo, 325 m, 13 May 1917 (Mus. Comp. Zool. #86762). TA: Villa Montes, 29-30 Oct and 4 Nov 1936 (Acad. Nat. Sci. Phil. ##143343,-45; Univ. Mich. Mus. Zool. #107537).

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New and unusual bird records from the Sudan

by F. R. Lambert

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During the 3 months February to April 1983, G. Richards, L. Richards and I observed 6 species previously unrecorded in the Sudan, and these are documented here, as well as other unusual sightings.

RED KITE *Milvus milvus*

Two kites observed at Erkowit (18°49′N, 37°01′E) in the Red Sea Hills on 28 Feb were identified as *M. milvus* by their deeply forked tails, large white inner-primary patch and whitish heads. This is apparently the first record for the Sudan (G. Nikolaus). The northwestern African population of *M. milvus* is sedentary (Brown *et al.* 1982), whilst those from north and central Europe are mainly migratory with some birds wintering on the North African coast (Etchécopar & Hue 1967, Cramp & Simmons 1980). Elsewhere in Africa the species is rare, though there is a record from South Africa, and another from East Africa (Brown *et al.* 1982), as well as others from Lebanon (Macfarlane 1978, apparently on southward migration), from Israel (Arnold 1962) and from Suez and Giza in Egypt (Bijlsma 1983, Goodman & Watson 1983). The sightings from Erkowit suggest that some of these birds may in fact overwinter along the Red Sea coast, probably entering Africa via the Middle East.

PURPLE GALLINULE *Porphyrio porphyrio*

We saw c. 25 of this easily identified species in marshland near Kosti (13°11′N, 32°38′E), 15-18 March. There are no previous records for the Sudan (G. Nikolaus), the nearest populations being in the Nile delta, 2000 km to the north (Cramp & Simmons 1980), and in the upper Nile in Uganda, nearly 1200 km to the south (Snow 1978). Although fairly shy and unobtrusive, it seems strange, in view of the number of individuals seen, that there are no previous records of this species, suggesting that perhaps these birds were not resident at Kosti, though Cramp & Simmons (1980) state that populations of *P. porphyrio* are usually sedentary.

LESSER JACANA *Microparra capensis*

At least 10 were found in marshland bordering the White Nile at Kosti, 15-25 March. Cave & Macdonald (1955) state that this species is possibly resident, but uncommon, citing records from the Sudd south of Kodok, and the Pibor River to the east of the Sudd. Snow (1978) also only records this species in Sudan as occurring south of Kodok. The Lesser Jacanas at Kosti were therefore c. 360 km north of their previously documented range.

ROYAL TERN *Sterna maxima*

A single non-breeding adult Royal Tern was observed on a coral beach just north of Port Sudan on 3 March (F. R. Lambert), the first record for the Sudan, and for East Africa. In West Africa, *S.m. albidorsalis* breeds on the Banc d'Arguin, Mauritania, mostly migrating south along the African coast, as far as Angola in winter, smaller numbers dispersing northwards to Morocco and Tangier (Cramp 1985). Harrison (1983) reports suspicion of breeding alongside Caspian Terns *S. caspia* on Coto Donana, Spain. Vagrants, probably of the neotropical nominate race, have reached Ireland, Britain, and Norway (Cramp 1985). The race of the Port Sudan bird was not ascertained.

BLACK TERN *Chlidonias nigra*

References to *C. nigra* in the Sudan (eg. Butler 1905, Macleay 1960, Moreau 1972) are now thought to refer possibly to other *Chlidonias* species (G. Nikolaus). Although Hogg *et al.* (1984) state that *C. nigra* is a passage migrant in small numbers, not recorded outside the Nile system, no specific records are cited. A Black Tern watched at close range on the Blue Nile near Tuzi Island, Khartoum on 24 February is therefore the first documented record for Sudan (G. Nikolaus). The tern, in adult winter plumage, showed the diagnostic blackish breast patches at the leading edge of the wing and uniform pale grey upperwing, rump and tail.

The main wintering area for *C. nigra* is on the Arguin Bank, West Africa (Etchécopar & Hüe 1967) and it appears to be extremely rare in East Africa, with only 3 published records from Kenya (Pearson & Lewis 1980), 7 from Ethiopia and one from Somalia (Ash 1983).

WHITE-THIGHED HORNBILL *Bycanistes albotibialis*

Several individuals were seen at Lotti Forest, in mid April. This Central and West African species, distributed from southern Nigeria and Loango to the Bwamba Forest of western Uganda (Mackworth Praed & Grant 1957) has not previously been recorded in the Sudan (G. Nikolaus).

WOOD WARBLER *Phylloscopus sibilatrix*

One seen in subdesert scrub near Erkowit, in the Red Sea Hills on 28 February was presumably overwintering. Spring passage starts in Egypt and Israel only in the first week of April (G. Nikolaus). Four recorded at Upper Talanga (4°01′N, 32°43′E, at 950 m) in the Imatong Mountains 7-15 April may have been on migration, since these dates coincide with the latest departure dates and passage dates from Zaire and Kenya (Curry Lindahl 1981). Although their exact wintering quarters is poorly known, most *P. sibilatrix* winter in tropical Africa within the lowland forest belt from Guinea to Sudan, Zaire and Lake Victoria (Moreau 1972). However small numbers probably also winter in East Africa (Britton 1980), and Ash (1983) documents a number of sightings of overwintering birds from Somalia.

SHRIKE FLYCATCHER *Megabyas flammulatus*

A male seen in the sub-canopy at Lotti Forest (4°03′N, 32°32′E) on 18 April is the first record east of the White Nile (G. Nikolaus). This West African tropical forest species extends as far east as the Kakamega and Nandi Forests of western Kenya (Britton 1980), the published record nearest to Lotti being from the Nile at Lake Albert, some 200 km to the southwest (Hall & Moreau 1970).

COMMON WAXBILL *Estrilda astrild*

Cave & Macdonald (1955) do not mention this species, though Hall & Moreau (1970) record it as occurring near Shambe on the upper Nile and at the periphery of the Ethiopian highlands near the Sudanese border. Although Mackworth Praed & Grant (1957) give the range of *E.a. peasei* as central and southern Sudan and Abyssinia, there are very few records for the Sudan (G. Nikolaus). The sighting of a flock of c. 40 near the Nile at Kosti, some 700 km north of Shambe, is therefore worthy of note.

SPANISH SPARROW *Passer hispaniolensis*

At least 10 were seen in cultivation near Suakin (19°05′N, 37°20′E), on the Red Sea coast 3-5 March. Cave & Macdonald (1955) record this species as

being a "very common non breeding visitor", though the species only winters in northern Sudan (Moreau 1972). Whilst there are a few records away from the Nile valley in northern Sudan (Butler 1911, Mackenzie 1955), there are no previous records from the Red Sea coast (G. Nikolaus).

SLENDER-BILLED WEAVER *Ploceus pelzelni*

A pair seen in reedy vegetation along the Nile in Nimule National Park (3°35′N, 32°04′E) in April, represent the first record of this species from the Sudan (G. Nikolaus). Previous Nile records are from some 120 km upstream (Hall & Moreau 1970).

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The display of the Booted Racket-tailed Hummingbird *Ocreatus underwoodii*, with notes on the systematic position of the genus

by Karl-L. Schuchmann

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Booted Racket-tailed Hummingbirds *Ocreatus underwoodii* are distributed exclusively between the upper tropical and lower temperate zones of the Andes in Venezuela southward to Bolivia (Meyer de Schauensee 1970). In the western Andes of southern Colombia this polytypic and sexually dimorphic hummingbird species is restricted to edges of subtropical and cloud forests at elevations of 1400-2100 m (pers. obs.). *O. underwoodii* is a tiny trochilid (range of body mass: male 2.7-3.2 g, n=6; female 3.0-3.1 g, n=3; personal findings and data from Miller 1963). During a study on the altitudinal distribution of the trochilid fauna of southwestern Colombia, field work was conducted in July/August 1976 and January/February 1977 in the Valle del Cauca. *O. underwoodii* was a common species in only one of our banding camps situated near Mares (03°32′N, 76°38′W) at 2000 m. Morphological features of mist-netted individuals were in concordance with those reported for the nominate subspecies known to occur in all 3 ranges of the Andes of Colombia (Peters 1945). Information presented herein on behavioural patterns of this species, especially display, could be collected only in January/February 1977.

During his long-term study on the breeding seasonality of the avifauna in the

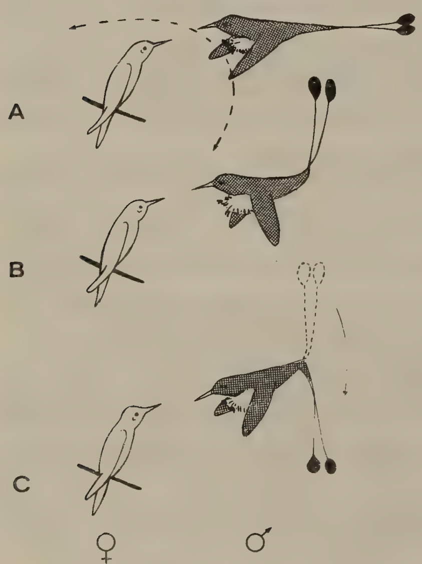

Figure 1. Three stages (A-C) of mutual display of the Booted Racket-tailed Hummingbird *Ocreatus underwoodii* (see text).

Valle del Cauca, Miller (1963) found that, although birds were breeding throughout the year, there was a pronounced peak in breeding activity from December to May. This corresponds to my findings on the local trochilid fauna. In February, 2 males of *O. underwoodii* had enlarged testes (2 mm), and mutual displays (Fig. 1) were frequently observed.

Males established feeding territories in defending clusters of flowering shrubs and sections of blossoming trees (nectar sources not identified) up to 3 m high. They attacked almost any intruding bird species, including the much larger Bananaquit *Coereba flaveola caucae* and other hummingbirds such as the Speckled Hummingbird *Adelomyia melanogenys cervina,* the Bronzy Inca *Coeligena coeligena ferruginea,* the Greenish Puffleg *Haplophaedia aureliae caucensis* and the Wedge-billed Hummingbird *Schistes geoffroyi albogularis,* although the intruders were rarely driven out of the territory. However, females and young males (similar looking to females) were allowed to feed within the territory, though their nectar-foraging activities were often interrupted by the territory owner, who threatened the conspecifics with the tail feathers spread-out horizontally, at the same time pushing forward the conspicuous white leg puffs up to the front of the breast (shown in Fig. 1; see also Miller 1963). The conspecific individuals would generally then stop collecting nectar and land on a perch. Young males, however, would perform a display similar to the territory holder's and tended to show their leg puffs, less developed than those of adult males, while raising and spreading the tail, though it still lacked the racket tail feathers. Normally, young males were, however, successfully chased out of the territory upon confrontation with the threat posture.

In the presence of females, the territorial bird performed an aerial display, 3 phases of which may be distinguished (Fig. 1):–

A. The male hovers in front of the perching female, slightly above her head, exposing the white leg puffs and keeping them just below the chin. In this posture he performs a horizontal arc flight 5-10 cm in front of the female who follows his flight pattern by head movements. The arc flight is performed up to 8-10 times with an audible wing beat frequency. Vocal communication was not recorded.

B. The male, in stationary flight in front of the female, erects his elongated tail feathers almost through 90°, still exposing his leg puffs.

C. Still hovering in front of the female, he lifts his back upwards and beats his racket tail downwards (through c. 180°), producing a mechanical sound which may be compared to the crack of a whip, repeated up to 5 times. The mechanical sound is accompanied by high pitched vocal utterings of the female. Thereupon, the female lowers her body slightly on the perch, apparently indicating her readiness for mating. The male changes his flight movements, he arcs in front of the female in a slow-motion flight pattern similar to phase A, and alights on the perching female for c. 3-5 secs. During the display, the female is resting motionless except for her head movements following the male's arc flight in phase A. The motionless posture of the female seems to be a main key for releasing the male's sexual activity.

The mutual display is primarily sexual in motivation and is similar to that observed in the Whitetip *Urosticte benjamini,* (pers. obs. of birds studied in our laboratory), in which males also perform their frontal display with erected tails (to c. 90°) in front of the stationary female. The flight pattern is very similar to

that of *O. underwoodii,* except that the erected rectrices are not beaten downwards through 180° but moved back to the normal horizontal position without producing any mechanical noise. In addition to this similarity in the males' display, there are also resemblances in the external features in females, and to a lesser extent in males, of the genera *Ocreatus* and *Urosticte.* Except for the slightly larger size of body and bill, females of *Urosticte* are almost identical in coloration, so that they can easily be mistaken in the field for those of *Ocreatus. Ocreatus* males resemble those of *Urosticte* in having an iridescent throat (green and violet in the nominate race and green in the subspecies *ruficrissa*), and both species possess a deeply forked tail. The outer rectrices of *Urosticte* are cone-shaped and suggest a less advanced state of the extremely modified outer rectrices of *Ocreatus.* The legs of *Urosticte* are feathered like those of *Ocreatus,* but the feathers are greyish and less developed than the conspicuous white puffs in *Ocreatus.*

On the basis of the display patterns and of the similar external morphology, I regard *Ocreatus* and *Urosticte* as closely allied genera of common origin. I observed a display similar to that of *Ocreatus* and *Urosticte* in the Blue-capped Puffleg *Eriocnemis glaucopoides,* another sexually dimorphic species. However, this puffleg species keeps its tail upright during the frontal display only through c. 70° from the normal horizontal position (pers. obs. of laboratory birds). In contrast to the characteristic white underparts of *Ocreatus* and *Urosticte* females, those of the Blue-capped Puffleg are rufous. This may be regarded as a derived character of a white-breasted ancestor, since at least the females of 2 other morphologically less advanced *Eriocnemis* species, the Emerald-bellied Puffleg *E. alinae* and the Black-thighed Puffleg *E. derbyi,* show some white feathers on their underparts. Males of *E. alinae,* however, do not closely resemble males of *Ocreatus* and *Urosticte* except for their dominant green coloration and the leg puffs. In addition, in the Sapphire-vented Puffleg *Eriocnemis luciani,* the Glowing Puffleg *Eriocnemis vestitus* and the Greenish Puffleg *Haplophaedia aureliae,* I observed in the field displays with tails held upright and moved back through c. 50-70° to a horizontal position. Hence, I regard this behavioural character as derived from a common ancestor; and based also on their females' similarities of external morphology, I suggest that *Ocreatus* and *Urosticte* should be considered as a sister group of *Eriocnemis* and *Haplophaedia,* together constituting a monophyletic cluster.

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Some new nesting records of padi-dwelling birds in Sabah, East Malaysia (North Borneo)

by Manuel Marin A. and Frederick H. Sheldon

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While participating in the 1981-1983 Western Foundation of Vertebrate Zoology's (WFVZ) study of the distribution, taxonomy, and ecology of Sabah's birds, we discovered the nests and eggs of 4 padi and marsh birds previously unreported from Sabah. The nesting of 2 of these species (*Ixobrychus cinnamomeus* and *Rostratula benghalensis*) has not previously been recorded in Borneo. The nests and eggs of the 2 other species (*Porzana cinerea* and *Gallinula chloropus*) have been found only once previously, by F. J. Grabowsky in 1882 at Bankau Lake in southeastern Borneo (Kutter 1884).

Descriptions of the nests and eggs of these birds are provided in this paper. The terms of Palmer (1962) are used to describe egg shape and colour.

CINNAMON BITTERN *Ixobrychus cinnamomeus*

It is surprising that nests of this common padi bird had not been discovered previously in Borneo, because we were able to find them easily during the summers of 1982 and 1983. They were built either in the tall (c. 80 cm) grass tussocks that grow in fallow, grazed rice padi or in tall (c. 120 cm) marsh grasses. The bitterns constructed their nests by folding and weaving the inner grasses of each tussock into a sturdy platform c. 23 x 23 cm, 15-20 cm above the floor of the padi or marsh (to be above water level), lining it with dry rice grasses. A makeshift cover was formed sometimes by pulling a few outer grasses of c. 30 cm over the top of the platform. Some nests were located as close as 1.5 m from one another. One or both parents were flushed when a nest was approached.

Two nests with eggs were found on 30 August 1982 in Penampang, Sabah (a suburb of Kota Kinabalu), and 3 on 7 June 1983 in nearby Putatan. Four of the nests had 3 eggs, and one had 2. Even though all the eggs we examined were fresh or slightly incubated, different stages of nesting can occur in the same field. In Penampang, in late August 1982, we found flightless, feathered chicks hiding in the same padi where fresh eggs were to be found a few days later. The bittern eggs were always dull white, but varied in shape from elliptical to sub-elliptical to short sub-elliptical. Egg dimensions:– WFVZ #140,296 (33.9 x 26.3, 33.1 x 26.0, 35.3 x 26.2), #140,297 (34.15 x 26.65, 32.85 x 27.5, 33.6 x 27.95, #140,298 (34.2 x 26.75, 35.65 x 26.5, 34.2 x 26.65), #140, 299 (34.15 x 25.6, 34.9 x 25.4).

WHITE-BROWED CRAKE *Porzana cinerea*

Grabowsky collected one C/7 on 25 April 1882 at Bankau Lake. We found 2 nests on 24 May 1983 and 2 on 7 June 1983 at Putatan. The nesting locality was one of the few wet, fresh-water marshes left by the *El Nino* drought in Sabah, and although only 100 x 50 m, contained at least 30-40 White-browed Crakes. The nests were built in the grassy (as opposed to sedge-dominated) parts of the marsh, where the water was as much as 1.2 m deep. Their construction was the same as that of the West Malaysian deep-water nests described by Cairns (1953: 174). Reeds were bent and woven into a pad on which sat a small cup (c. 15 cm in diameter) lined with dry marsh grass.

The pad was 13-45 cm above the water and was shielded from view and the sun by surrounding grasses folded over the top (c. 40-60 cm above the platform).

The 2 nests discovered in May held, respectively, one fresh egg and 4 well-incubated eggs. The June nests contained 2 slightly-incubated and 4 well-incubated eggs respectively. The sub-elliptically shaped eggs were creamy-buff and marked heavily with fine spots and blotches of reddish-brown, especially at the large end. Egg dimensions:– WFVZ #140,379 (29.6 x 22.8), #140,380 (27.5 x 21.15, 29.75 x 21.9, 29.5 x 21.55, 29.65 x 22.05), #140,381 (29.2 x 21.5, 30.2 x 22.05, 30.6 x 22.0, 29.95 x 21.85), #140,382 (31.2 x 23.3, 30.0 x 23.1).

COMMON MOORHEN *Gallinula chloropus*

Accounts in Smythies (1981) and elsewhere (eg. Medway 1970) give the impression that this species is uncommon. Although it may be unusual in Sarawak and may have been less abundant previously in Sabah, it is currently one of the most common large, padi and marsh birds on Sabah's west coast. We saw them often in Penampang, and recorded them in other localities as follows:– 6 in the lake at Tempassok Plain, Kota Belud on 8 March 1982; 12 in padi fields at Papar on 9 September 1982; c. 20 in the Putatan marsh on 11 May 1983; c. 20 in a flooded suburban lot at Innanam on 18 May 1983. The only nesting record for this species is that of Grabowski, 25 April 1882, at Bankau Lake, where he apparently collected c. 20 eggs. (No details were given by Kutter on the number of clutches.) However, A. Lamb (in Phillipps 1982: 154) saw "fluffy brown fledglings" with their parents among marsh reeds in January 1982 at Tenom, Sabah. We found a nest at the Putatan fresh-water marsh (mentioned above) on 7 June 1983. It was composed of a base formed by bent, woven marsh grasses c. 18 cm above the water. Surrounding grasses, which were from 1-1.2 m high, were pulled together, producing a well-formed enclosure, the roof of which was c. 29 cm above the base. The entrance to the nest was on the side and was 11 cm wide and 20 cm high.

The nest contained 5 eggs, all of which were almost completely incubated. They were pale buff, with widely dispersed spots and small blotches of reddish-brown, and were long sub-elliptical. Egg dimensions:– WFVZ #140,301 (45.5 x 28.05, 45.65 x 29.1, 45.45 x 29.3, 44.3 x 31.0).

GREATER PAINTED-SNIPE *Rostratula benghalensis*

The original edition of Smythies (1960) indicated that this species was known in Borneo only from a single specimen. The latest edition of Smythies (1981), however, notes several recent sightings from Sabah by J. Q. Phillipps. We found the bird to be common in padi fields and wetlands along the west coast of the state. On 1 May 1983 we saw a male bird with 2 chicks in a fallow padi at Tuaran, and on 4 June 1983 at Mandangin (near Beaufort) we watched a male incubating eggs. His nest was located in the centre of a sparsely vegetated padi and was built of thick, brown, rotting rice grass pushed into a cup (2 cm deep) on an old Water Buffalo dung-patty. The combination of mud and dung lifted the nest, which was 8 x 8 cm, c. 10 cm above the water level.

The nest contained 4 pyriform eggs, which were pale buff, blotched and spotted with dark brown. Egg dimensions:– WFVZ #140,351 (35.0 x 25.1).

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Subspeciation in the Afrotropical Superb Starling *Lamprotornis superbus*

by P. A. Clancey

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In his important pioneer study of the complex East African avifauna of over 60 years ago, van Someren (1922) states that in the Superb Starling *Lamprotornis superbus* Rüppell the average wing-length in both sexes in East Africa is 125 mm, the maximum 128 mm, ie. larger than in the case of the White Nile population. Since the publication of this brief statement, possible geographically related variation in this sturnid seems not to have been investigated in any depth by other workers. Recent research effected at the British Museum (Nat. Hist.), Tring, and in southern African centres confirms that the species exhibits significant size-variation necessitating its recognition as a polytypic species.

The Superb Starling was described in 1845 from Shoa, Ethiopia, by Dr W. P. E. S. Rüppell and ranges from the southern Sudan in Equatoria, central and southern Ethiopia and northern Somalia, south through the drier interior aspects of East Africa to reach its range limits immediately north of Lake Malaŵi. While broadly distributed in the north of its range, to the south of the Kenya/Tanzania border the starling's distribution becomes markedly attenuated west–east, and this is underscored by the finding that Tanzanian elements are longer in the wing in relation to the tail-length than in the case of the northern representatives (clearly shown in Table 1). As a result of this finding, the populations of *L. superbus* are now arranged in 2 subspecies, as hereunder presented.

The Superb Starling has for long been grouped with a range of relatively dull-coloured starlings, such as *Spreo bicolor, S. albicapillus* and *S. fischeri* in the genus *Spreo* Lesson, 1831 (type-species *Turdus bicolor* Gmelin), but is

TABLE 1

Wing- and tail-length data (in mm) of material examined of the 2 subspecies of the Afrotropical Superb Starling *Lamprotornis superbus*

		Wings				Tails				
Territory	Sex	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD	w/t ratio
			Lamprotornis superbus superbus							
Ethiopia	♂♀	23	115–126.5	121.3	3.21	23	57–71	64.6	3.48	53.2
Sudan	♂♀	13	112–122.5	116.1	3.12	13	59–67.5	63.0	2.17	54.2
Kenya	♂♀	33	113–127	119.9	3.25	33	55.5–69	62.0	3.28	51.7
Somalia	♂♀	19	113–125.5 (128.0)	120.2	4.38	—	—	—	—	—
			Lamprotornis superbus excelsior							
Tanzania	♂♀	22	126+–133	128.2	1.96	22	63–71	67.2	1.99	52.4

Statistical comparisons

	Wing	*Tail*
L.s. excelsior compared with contiguous Kenyan sample of *L.s. superbus*	$t=10.55$ $p<0.001$ DF=53	6.54 $p<0.001$ DF=53
Same compared with Ethiopian sample	$t=8.46$ $p<0.001$ DF=43	2.99 $p<0.01$ DF=43

now increasingly placed with the wide assemblage of coruscant Afrotropical "glossy" starlings in the genus *Lamprotornis* Temminck, 1820 (type-species *Turdus caudatus* Statius Müller). (See papers on this issue by Clancey 1958 and Craig & Hartley 1985.) Two generic names have been introduced by specialists for the Superb Starling, these being *Lamprospreo* Roberts, of 1922, and *Painterius* Oberholser, of 1930. Amadon, in the continuation of Peters' *Check-List* (1962), places these in the synonymy of *Spreo,* but they should in fact be lodged in that of *Lamprotornis.*

The names, characters and ranges of the 2 subspecies of the Superb Starling will now stand as follows:

Lamprotornis superbus superbus Rüppell

Lamprotornis superbus Rüppell, *Syst. Uebers. Vög. Nord-ost-Afr.,* 1845, p. 65: Shoa, central Ethiopia.

Measurements. Wings in adult ♂♀ from Ethiopia 115–126.5 (121.3) mm, tails 57–71 (64.6) mm. In the "southern" Kenya population wings in ♂♀ 113–127 (119.9) mm, tails 55.5–69 (62.0) mm (Table 1).

Material examined. 96 specimens:– *Ethiopia:* Adau (Danakil); "Shoa", Addis Ababa; Tadechamulka; Lake Zwai; Alia Amba; Addis Alam; Billen; Yabelo (=Yavello); Harar. *Sudan:* "Sudan"; Mongalla; Kit R. (Bahr-el-Ghazal); 32 km NE of Torit; Eros, Didinga Mtns. *Somalia:* "Somaliland or Somali"; Burao; Waghar Mtn; Sogsodi; Geloke; Gedais; NW of Obbia. *Kenya:* "Masai"; Mtito Andei; Tsavo; Voi; N Uaso Nyiro R; Machakos; Fort Hall; Loita Plains; Nguruman Hills; Lake Naivasha; Athi R; Garissa; Chanler's Falls; Lokori; Kongelai; Katcheliba (Suam R). *Tanzania:* Itumba (Wembere Steppe); Choma, S Paré.

Range. Central and southern Ethiopia, reaching the Danakil region in the east and Harar in the southeast, the southern Sudan in Equatoria, northeastern Uganda towards the Kenyan border, Kenya (largely absent on coast), Somalia, and Tanzania in the north to the east of Lake Victoria in the Wembere Steppe, and in the east to the foothills of the Paré Mtns.

Remarks. The xeric Somali population is slightly differentiated from more western populations in showing on average a broader white breast band and lighter, more golden, rufous lower ventral surfaces.

Lamprotornis superbus excelsior, subsp. nov.

Type. ♂, adult. Breeding (young in nest). Lake Basuto, near Mt Hanang, Tanzania, at 1585 m a.s.l. 12 August 1951. Collected by M. P. Stuart Irwin. In the collection of the National Museum of Zimbabwe, Bulawayo, Mus. Reg. No 99021. *Measurements of the Type:* wing (flattened) 132, culmen from base 25, tarsus 36.5, tail 68 mm.

Diagnosis. Differs from the nominate race (as above) in having a longer wing – 22 ♂♀ 126–133 (128.2) mm, and tails 63–71 (67.2) mm. The tail is less variable in length but not longer than in *L.s. superbus.* Ranges slightly darker rufous below.

Material examined. 25 specimens:– *Tanzania:* "Tanganyika"; Ngorongoro Crater; Manyoni; Dodoma; L Basuto, Hanang; Sengaruka Plains; Kilosa; Iringa; Ugogo; N end of Lake Malaŵi.

Range. The dry plateau regions of the interior of Tanzania to the south of the range of *L.s. superbus* from Serengeti and the Ngorongoro Crater, south to the west of 37°E to the northern limits of the southern highlands, but taken at the northern end of Lake Malaŵi. In central Tanzania not much to the west of 34°E.

Remarks. The Tanzanian sample of *excelsior* of 22 ♂♀ compared with one of 33 of the contiguous Kenyan population of nominate *L. superbus* gives a CD (coefficient of difference) value of 1.59, which indicates a joint non-overlap of 95% between the two – well above the conventional level of subspecific difference. The same sample of *excelsior* compared with the Ethiopian (topotypical) one of 23 specimens of *L.s. superbus* gives a value of 1.33, which is again above the conventional subspecies level of 1.28.

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Great Green Macaw *Ara ambigua* collected in northwest Ecuador, with taxonomic comments on *Ara militaris*

by Jon Fjeldså, Niels Krabbe and Robert S. Ridgely

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According to the literture (eg. Forshaw 1973, Meyer de Schauensee 1966) a substantial gap exists between the range of the nominate subspecies of *Ara ambigua* (Great Green, or Buffon's Macaw), which is not recorded definitely south of northern Chocó in northwestern Colombia (southernmost recorded locality apparently Nuquí), and *A.a. guayaquilensis,* known only from the type

Figure 1. Map of localities mentioned in the text. The shading shows the known distribution range of the Great Green Macaw *Ara ambigua,* the hatching the distribution of Military Macaw *Ara militaris.* Río Sapayo and Río Durango (Esmeraldas?) cannot be located. See the gazetteer of Paynter & Traylor (1977).

locality in the Chongon Hills, Prov. Guayas, of southwestern Ecuador (Fig. 1). That the species occurred in the intervening region was regarded as uncertain, though the discovery (Ridgely 1982) of 3 unpublished specimens in the AMNH from Río Sapayo and Río Durango was regarded as evidence that it probably was found there, at least formerly.

Its continued presence in northwestern Ecuador was substantiated when, on 26 October 1983, N.K., in company with Paul Greenfield, obtained a freshly shot specimen from a local hunter at El Placer, altitude 670 m, province of Esmeraldas, Ecuador. The locality is on the railroad, about half way between Lita (Imbabura) and San Lorenzo (Esmeraldas). The area is extremely humid with no dry season, and has been covered by tall, primary forest, which, however, at the present is being rapidly cleared. One or two pairs of unidentified large green macaws were seen flying over the forest almost daily during 3 visits in March 1979, October 1983 and July 1984.

There is now much less reason to doubt the sightings in the provinces of Pacaritambo in Los Ríos and Finca Victoria in Pichincha (Brosset 1964, Vuilleumier 1978), or the origin of the 3 specimens for Río Sapayo (Tapayo?) and Río Duranga, both believed by Paynter & Traylor (1977) to be situated in Esmeraldas. Recent sightings (as late as 1985) show that the population in the Chongon Hills also exists, but is probably very small. There may no longer be any populations in the now almost deforested region between Esmeraldas and the Chongon Hills area. The habitat at the type locality of *guayaquilensis* is deciduous forest, though the birds regularly fly out into partially cultivated terrain in order to feed (Ridgely 1982).

TABLE 1

Measurements (in mm) of the maxillae of the *Ara ambigua* and *A. militaris* macaws

	length (chord)	width (at base)	depth (at base)
Ara ambigua guayaquilensis			
♀Guayas (AMNH, type)	63.3	30.2	31.5
♂R. Durango (AMNH 474249)	64.3	28.0	32.5
♀R. Sapayo (AMNH 474250)	66.8	28.0	34.2
♀R. Sapayo (AMNH 474251)	67.4	28.5	34.4
♀El Placer (ZMUC 80001)	67.0	30.5	34.1
All 5 specimens	63.3–67.4, $\bar{x}$ 65.7	28.0–30.5, $\bar{x}$ 29.0	31.5–34.4, $\bar{x}$ 33.4
Ara a. ambigua			
7 from C America	69.1–73.2, $\bar{x}$ 70.5	29.9–33.0, $\bar{x}$ 31.8	36.6–38.6, $\bar{x}$ 37.4
13 from NW Colombia	64.3–77.4, $\bar{x}$ 69.7	29.2–34.0, $\bar{x}$ 31.2	33.6–39.4, $\bar{x}$ 37.2
Ara militaris mexicana			
10 specimens	54.0–60.7, $\bar{x}$ 57.1	25.4–28.9, $\bar{x}$ 27.1	26.7–32.4, $\bar{x}$ 29.3
Ara m. militaris			
2 specimens	52.3–55.9, $\bar{x}$ 54.1	25.2–26.0, $\bar{x}$ 25.6	26.0–27.2, $\bar{x}$ 26.8
Ara m. boliviana			
4 specimens	53.4–55.9, $\bar{x}$ 55.0	26.3–27.2, $\bar{x}$ 26.8	26.3–30.2, $\bar{x}$ 27.6

The El Placer specimen (ZMUC 80001 in the Zoological Museum of Copenhagen) was compared directly with 40 specimens of *Ara ambigua* (including the type of *guayaquilensis*) and the Military Macaw *Ara militaris* (including subspecies *mexicana, militaris* and *boliviana*) in the American Museum of Natural History (AMNH), the Academy of Natural Sciences of Philadlephia (ANSP), and Louisiana State University, Baton Rouge (LSU). ZMUC 80001 has a larger bill (see Table 1) and slightly yellower under wing-

coverts and underside to the primaries than the *guayaquilensis* type, but a darker green, less golden general coloration. It is thus as green as an *A. militaris* from Bolivia in ANSP. The El Placer bird's bill is also bigger than the smallest-billed *A.a. ambigua* from Chocó, Colombia. The 3 unpublished *guayaquilensis* specimens in AMNH are 2 females from Río Sapayo and a male from Río Duranga. The male and one of the females have the general coloration as green as the El Placer specimen. The male has the under wing-coverts slightly more ochre, the female slightly yellower. The other female has an underwing matching the El Placer bird, but a general coloration as golden as both the type of *guayaquilensis* and 20 specimens of nominate *ambigua.* On the basis of 5 available specimens, therefore, *guayaquilensis* seems to be rather variable in appearance.

When comparing the 5 specimens of *guayaquilensis* with the 20 nominate *ambigua* and 16 *A. militaris,* it became apparent that colour of the underside of the wings and tails varied so much within each form that it could not be used for ditinguishing *A. militaris* from *A. ambigua* or from the latter's subspecies. Furthermore, the red on the forehead and tail, the blue in the wings and tail, and the amount and shade of maroon on the throat, foreneck, and mid-belly, are all subject to considerable variation in both subspecies of *A. ambigua.* This is of note, because these characters were used to separate the subspecies *A.m. boliviana* from nominate *A. militaris* by Reichenow (1908), though the subspecific distinctness of *boliviana* was soon doubted by Zimmer (1930) and later by Bond & Meyer de Schauensee (1943).

It has been supposed that *A. militaris* is in general a bird of deciduous forest and *A. ambigua* of humid forest (Forshaw 1973), but *A. militaris,* however, occurs in humid forest in eastern Peru and eastern Ecuador, and *A.a. guayaquilensis* in deciduous forest in western Ecuador; whereas in northern Peru *militaris* occurs both in deciduous (Koepcke 1961) and humid (T. A. Parker) forests. Thus, there seems to be no difference between the habitats of these 2 species. The one real consistent difference is altitudinal, *A. ambigua* occurring entirely in the lowlands, while *A. militaris* is primarily montane.

There are 3 possible interpretations of the apparent intermediate position of *guayaquilensis* between the (golden-backed and large-billed) *A. ambigua* and the (green-backed and small-billed) *A. militaris:–* (1) It may be a race of *ambigua* which has converged towards *militaris*; (2) it could represent one or several small relict populations of a cline which once connected the 2 species; or (3) it could represent a hybrid population. The great individual variation is strongly in favour of the last interpretation. A most likely evolutionary scenario might be as follows:– (1) A proto-*A. militaris* dispersed through Central America and the tropical valleys of the Colombian Andes and southwards east of the Andes; (2) after range fragmentation, a geographically intermediate population in southern Central America or northern Colombia diverged, giving rise to *A. ambigua* by a "leapfrog" pattern (see Remsen 1984) of geographical variation; (3) during periods with more continuous forest habitat, the newly formed *A. ambigua* dispersed to western Ecuador and established breeding populations, which today possibly have relict characters; and (4) hybridization took place as *A. militaris* straggled across the Andes and formed mixed pairs with *A. ambigua.* That large green macaws do at least

occasionally wander substantial distances from their normal ranges is indicated by Ridgely's observation of one (species undetermined) in the coastal lowlands near Buenaventura, Colombia, on 10 January 1983. Trans-Andean dispersal of *Ara militaris* is known to occur at the Marañón deflection in northern Peru (Koepcke 1961), and may occur in Nariño, southern Colombia, as well.

The ranges of the 2 macaws come closest in Colombia (Haffer 1975), but even here they are not known to be sympatric. Military and Great Green Macaws have therefore been considered closely related allospecies (Ridgely 1982). The present analysis of the west Ecuador population seems to indicate that this may not actually be the case, though we are not yet in a position to state authoritatively that the 2 taxa are in fact conspecific. Hopefully, a more detailed future mapping of the distribution and morphological variation of Great Green Macaws in Ecuador, and of the seasonal and geographic occurrence of Military Macaws west of the Andes will shed further light on the problem.

Nevertheless, the great individual variation among the 5 West Ecuadorian specimens of *guayaquilensis* and the morphological overlap, both in bill-size and colours, with nominate *ambigua* makes it difficult to accept *guayaquilensis* as a valid race. We therefore propose synonymizing it.

Acknowledgements: We thank the curators of AMNH, ANSP, and LSUZM for letting us examine their specimens of *A. militaris* and *A. ambigua,* and the Danish Nature Conservancy Board for issuing the necessary permit for international transport of the El Placer specimen.

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Notes on the diet of the Least Honeyguide *Indicator exilis* in eastern Zaire

by †J. P. Chapin, Ruth T. Chapin, L. L. Short and J. F. M. Horne

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During the course of their research in the vicinity of Tshibati (2°14'S, 28°47'E) at 1970 m on the southwestern side of Lake Kivu, in the eastern highlands of Zaire during the 1950's, James P. Chapin and Ruth T. Chapin studied and collected numbers of honeyguides. After analyzing stomachs of Least Honeyguides *Indicator exilis* that had been collected, Dr Chapin prepared a rough manuscript that was later edited somewhat by Mrs Chapin. L.L.S. and J.F.M.H. more recently reviewed that manuscript in the light of their honeyguide studies (Short & Horne 1985), and have expanded upon some sections, particularly checking sexual and age variation in diet. This report is the result, and it is primarily based upon the careful determinations of stomach contents by Dr Chapin, whose endeavours have provided the stimulus for so many African ornithological studies.

The habitats about Tshibati predominantly were mixed:– fire-affected montane bamboo, dry evergreen forest, scrub woodland and bracken woodland above the village; and farmland, scrub woodland, pastures, elephant grass with scattered *Erythrina* trees, old groves of *Cinchona* trees, and a few open marshes below the village. The farm at which the Chapins stayed was near patches of all of these habitat types, varying from small to large.

The Least Honeyguides were collected about artificial bee hives put out to attract various honeyguides at the farm where the Chapins were housed. With their assistants Boniface and Caporali, the Chapins at intervals collected some honeyguides at the hives by using a butterfly net after a honeyguide had entered the hive, the net being then thrust over the entrance and the honeyguide driven out into the net by their activities. By this method the Chapins had obtained their first specimen of the Dwarf Honeyguide *I. pumilio* (Chapin 1958). They also ringed at least a dozen honeyguides, but had little success thereafter in seeing or capturing ringed honeyguides (the collecting may have affected attendance of the honeyguides on the bee hives).

Altogether the Chapins provided data on 30 specimens of *I. exilis pachyrhynchus* collected between March 1955 and February 1958 and information on stomach contents for 26 of them. Least Honeyguides are little known, despite an extensive African range, and these data provide information on a modest sample from a single area over several years, with specimens from all months except June and July. They form the most substantial base yet of information on the diet of the Least Honeyguide.

The 26 Least Honeyguides whose stomach contents were examined by Dr Chapin included 10 adult males, 9 adult females, 3 juvenal males and 4 juvenal females. Of the 26 stomachs, 20 were noted as "well-filled". Significant is the fact that 24 of the 26 stomachs contained moderate to large amounts of wax,

though one of these had only a small amount of wax present. The 2 birds lacking wax in the stomach were adults; all juveniles had managed to obtain wax. The stomachs of all 24 birds that contained wax also held remains of insects or spiders as well. Birds observed to feed on wax had usually spent 20 minutes or less at a feeding, but occasionally one fed more or less continuously on wax for up to 64 minutes. Observations of *I. variegatus, I. indicator* and *I. minor* feeding on wax in Kenya are in accord with the Chapins' observations of *I. exilis* and also of *I. pumilio.* In Kenya (L.L.S. and J.F.M.H.), individuals may at times perch near the wax source for up to 2 hours, but feeding is sustained only for up to an hour, or at most 75 minutes, after which the honeyguides go elsewhere (personal observations of colour-ringed Kenyan honeyguides). All these honeyguides prefer bare fresh wax rather than old or broken wax or wax mixed with honey and larvae or pupae, according to all our observations.

It appears that the Least Honeyguides infrequently, if at all eat bees. Two females each contained possible remains of a single honeybee, and another female contained fragments of a larva that might have been a larval honeybee. Certainly bees did not occur in recognisable numbers in any stomach. It is the experience of all the authors that honeyguides avoid the hives when bees are very active, and when there are 2 hive entrances with bees active at one, the honeyguides use the other entrance. There is no special attention paid to the honeyguides by the bees, but bees in large numbers are too much for the honeyguides, especially the larger honeyguides *I. indicator* and *I. variegatus.* Another point in relation to the hives, and wax sources generally, is that small honeyguides (*I. exilis* noted by the Chapins, *I. minor* and *I. meliphilus* by L.L.S. and J.F.M.H.) readily enter very small holes or cracks in the hive that are too small for the larger honeyguides.

Overall, the contents of the stomachs of the Least Honeyguides contained, in addition to beeswax and possibly a bee or two, spiders, orthopterans, dipterans and their eggs, coloeopterans, ants, termites, leaf-hoppers, caterpillars, larvae that were indeterminate, plant stems, a few fibres, and "silk", most likely from the lepidopterous waxworms *Galleria melonella* that associate with beehives and eat beeswax (several wax-worm caterpillars were found in the same stomach, that of a juvenal male, containing the silk).

Spiders are represented in but 5 stomachs, but 3 of these (all females) contained more than one species of spider among them. Only a few orthopterans were found, in 3 stomachs. Dipterans were identified in 8 stomachs of males, females and juveniles; in at least 3 of these the remains were tipulid-like, and in 2 cases the dipterans were associated with egg masses. Coleopterans were found in 6 stomachs of females and juveniles but not certainly in any adult male. Termites and leafhoppers were noted only in one stomach each. Caterpillars were found in 2 stomachs each of males, females and juveniles, with unidentified larvae found in 3 additional females and one other juvenile. All stomachs contained some to many insects or spiders or both. Pieces of plant stems in 3 stomachs measured as much as 7 mm in length, and were probably ingested accidentally as the honeyguides seized insects. Fibres were noted in only one stomach.

As always, a great majority of the insects were so finely ground and fragmented that they could not be identified, even to order. In 14 stomachs the

insects (and spiders?) were noted as occurring in masses, some partly digested, and others in tiny fragments. Most of the insects and spiders seem likely to have been obtained through gleaning on the bark or in the foliage of trees and bushes. The dipterans, some beetles, some orthopterans and perhaps spiders and the leafhoppers could have been taken by flycatching, which we have seen this honeyguide perform; or when flushed by gleaning honeyguides that then jumped at them or made a short aerial sally to take them.

The Chapins and their collectors also examined 13 stomachs of *I. pumilio* obtained about the same hives (Chapin 1958), all of which contained at least some wax particles, 10 of them being moderately to well-filled with wax. All 13 stomachs also contained insects, but the mass of the latter exceeded that of the wax in only 3 stomachs. Many of the insects could not be determined but those in 6 stomachs largely were coleopterous, including at least one weevil. Other remains included: small ants in 2; one leafhopper; and larval remains possibly of caterpillars in several. Three tiny spiders were found in each of 3 stomachs. One stomach contained 6 white fragments of the shell of a tiny snail. From these less extensive data it seems that the diet of the Dwarf Honeyguide is very like that of the larger Least Honeyguide (Chapin's weights of the 2 species are 9-15 gms for *I. pumilio,* and 15-22 gms for *I. exilis* at Tshibati).

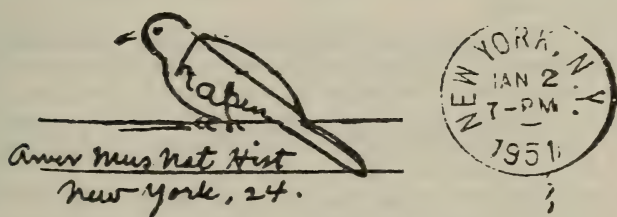
The presence of insects and spiders usually in numbers in all stomachs examined by Dr Chapin is in accord with the Least Honeyguide, the Dwarf Honeyguide and other honeyguides (Friedmann 1955), all being known not to rely entirely on wax, even when the wax is freely available. With individually marked birds in Kenya, L.L.S. and J.F.M.H. found that honeyguides, once they have fed on wax for a period, usually do not return for several hours. This interval varies depending upon dominance, as subordinate birds tend to return frequently to a wax source after perhaps perching waiting nearby for long periods, if deterred by the presence of dominant conspecific individuals, or of dominant species. Also, heavy eating of wax is associated with frequent drinking (Short & Horne, unpubl.). Some honeyguides that feed at a wax source daily appear only once or twice a day, and others show up irregularly every few days.

In addition to the 26 for which there was information on stomach contents, 2 more adult females and an additional 2 juvenal males were collected. Females with clear indications of breeding (enlarged ova, egg in oviduct, enlarged oviduct) were collected April-May, September, and January-February, and juveniles August-February. All but one adult male had testes measuring over 3.5 mm during March, May, September, October and January. The breeding season thus is long, and individuals are ready to breed or can become so (with well-developed gonads) readily. Chapin's notes suggest that the period of the moult, from September to November, is the low point of breeding activity of Least Honeyguides at Tshibati. It is significant that only one juvenal female, collected in August, had a tiny ovary; each of the others (collected October-November) had an ovary measuring 4.5 by 2-3 mm. Also, 4 of the 5 juvenal males had testes at 2 mm or more from October to February, and only one had small testes (1.5 x 1 mm). Data from the juveniles thus suggest that they may be able to breed at an early age, perhaps before attaining the adult plumage. Finally, Dr Chapin noted consistent asymmetry of the testes of all but one male, the asymmetry favouring the right testis in 5 and the left testis in 4

males. Testicular asymmetry is widespread in piciforms (Chapin 1939, Short 1982).

* * *

James P. Chapin's well-known colophons always embellished one's realisation of the special attention he devoted to a reply to any letter or note which he received. The colophon of a honeyguide (*Indicator* spp.) herewith is one of a series of birds perched or in flight penned by Chapin in New York above his address on the outside of aerogrammes to Herbert Friedmann in late 1950 and early 1951. At this time Friedmann was studying honeyguides in southern Africa, regularly communicating with Chapin, who also had a deep interest in them. Chapin's excited discourses often instantly followed the arrival of a new Friedmann letter, for Chapin carefully noted the full date on every letter he received (he ever was meticulous in field studies, research, specimen preparation and correspondence) and his replies frequently were dated the same day Friedmann's letters arrived. This lengthy correspondence shows a development of Friedmann's deductions on honeyguides and Chapin's influence on his ideas (in his 1955 monograph on the honeyguides, Friedmann made "particular mention of the helpful and critical cooperation given by James P. Chapin, our leading expert on African birds" – US Nat. Mus. Bull. 208: VI). So Chapin's honeyguide colophons like that shown here reflect both his special charm, and the important interplay between Chapin and one of his major correspondents. It is a pleasure to share this memory of Jim with the reader.



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The Waterfall Swift *Hydrochous gigas*

by Ben King

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Hydrochous gigas is known in most literature as the Giant Swiftlet *Collocalia gigas.* Somadikarta (1968) described its nesting in colonies behind and near waterfalls, and Becking (1971) described its nest and eggs. Medway (1966) suggested that nest type and the ability (or inability) to echolocate could help to elucidate the taxonomic relationships in the genus *Collocalia* – thus the genus could be split into the glossy non-echolocators and the non-glossy echolocators. Medway & Wells (1969) later demonstrated that *Collocalia gigas,* while non-glossy, was unable to echolocate, thus indicating that the genus *Collocalia* had a third subdivision: non-glossy non-echolocators. Brooke (1970) introduced the subgeneric name *Hydrochous* and applied subgeneric names to these groupings: (1) *Collocalia,* glossy non-echolocators; (2) *Hydrochous,* non-glossy non-echolocator; and (3) *Aerodramus,* non-glossy echo-locators. Brooke (1972) later raised these 3 subgenera to generic rank. Thus *Collocalia* was restricted to *esculenta, marginata* and *troglodytes,* while *Hydrochous* became a monotypic genus with only *gigas,* and *Aerodramus* included the remainder and majority of the forms in the genus. *Hydrochous* was split from *Collocalia* because of its larger size, lack of gloss in plumage, more emarginate outer rectrices in juveniles than adults, and its unusual nest and nest site – under or near waterfalls. Medway & Pye (1977) concurred, chiefly basing their split of *Aerodramus* from both *Collocalia* and *Hydrochous* on the ability of the *Aerodramus* swiftlets to echolocate, while splitting *Hydrochous* from *Collocalia* on morphological grounds.

Hydrochous gigas appears to be rare and local in its distribution and has seldom been observed. The sole well-known colony is at the Cibeureum waterfall in Gunung Gede-Pangrango National Park in West Java. The birds roost under and adjacent to the upper part of the waterfall, normally leaving hurriedly at dawn and returning after sunset. However, on 3 August 1985, a flock of 60-80 *gigas* flew over and past the waterfall for a full 2 hours after dawn, and then mounted higher, but were still readily visible for another 3 hours. This offered a superb opportunity to observe their flight characteristics and tape their calls. Their flight is direct, with rapid, deep, steady, smooth beats; they glide with wings only slightly below the level of the back. For the first 2 hours of observation, they kept their tails tightly closed, only rarely offering a glimpse of the tail fork. The fork was visible more often when the birds were flying higher.

This manner of flight differs dramatically from that of the *Collocalia* and *Aerodramus* swiftlets by its smooth directness, without any of the jerkiness associated with swiftlets' side to side movements, and *Hydrochous* glides with its wings more near the horizontal (not so down-turned). In its size, its flight silhouette and in its manner of flight, *Hydrochous* appears to be inseparable from the House Swift *Apus affinis.* Some observation of House Swifts in flight showed them to have a strong tendency toward a fully spread tail versus the closed tail of *Hydrochous,* but this could have been due to flight conditions. The calls heard and taped from *Hydrochous* are a loud twittering, heard frequently throughout the observation period and readily audible above the

roar of the waterfall. These calls were very similar to those of the House Swift and quite unlike the calls of the much less vocal *Collocalia* and *Aerodramus* swiftlets, whose calls are not so loud.

These observations confirm the utility of removing *gigas* from the genus *Collocalia* (Brooke 1972, Medway & Pye 1977). Further, while the flight differences could be an effect of larger body size, they do suggest that the generic affinities of *Hydrochous* may be open to re-interpretation and that it may not be a swiftlet at all – indeed, whatever *gigas*'s true affinities, it in fact looks like a swift, rather than a swiftlet, in the field.

Thus I recommend that *Hydrochous gigas* be called the Waterfall Swift, which alludes to its roosting and nesting site. Whether *gigas* is more closely related to the swiftlets or to one of the swift groups, I believe it more useful for its English name to reflect its appearance in life rather than its evolutionary history.

Acknowledgements: I wish to thank Richard K. Brooke, Dr Charles T. Collins, Lord Cranbrook and Dr David Wells for their helpful suggestions towards this paper, and Paul Andrew and David Bishop for their assistance in the field. The Sound Laboratory of the Laboratory of Ornithology at Cornell University provided tape recording equipment and a repository for the tapes.

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A new tyrannulet (*Phylloscartes*) from northeastern Brazil

by Dante Martins Teixeira

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In the last 7 years, the Ornithological Section of Museu Nacional has made several expeditions to the residual Atlantic forests of Alagoas, Pernambuco and Paraiba, in extreme northeastern Brazil. As mentioned by Teixeira & Gonzaga (1983a, 1983b, 1985), these researches led to the discovery of undescribed taxa and also birds never previously reported north of the São Francisco River (Teixeira *et al.* 1986), probably part of an unexplored highland endemic avifauna, only the coastal lowlands having previously been investigated ornithologically. In 1983, 1984 and 1985, the field work performed in the highland forests (550 m) of "Serra Branca", county of Murici (c. 9°15'S,

35°50′W), Alagoas, led to the obtention of a new tyrannulet of the genus *Phylloscartes,* described below. I have named it in memory of my wife, Cecilia Torres (1952–1985).

Long-tailed Tyrannulet **Phylloscartes ceciliae** sp. nov.

Holotype. Museu Nacional No 34041. Inactive adult male (gonads 2 mm) from "Serra Branca", Murici, Alagoas, northeastern Brazil (c. 9°15′S, 35°50′W), collected 8 May 1984. Total length 131 mm. Weight 8.4 g. Skull ossified. Moulting crown, neck, breast, upper wing coverts, inner secondaries, ultimate and penultimate primaries.

Paratypes. Museu Nacional No 34042. Inactive adult male (gonads 2 mm) from the type locality, collected 9 May 1984. Total length 124 mm. Weight 8.4 g. Skull ossified. Moulting crown, back, breast and the right antepenultimate primary.

Museu Nacional No 34043. Inactive adult female (ovary 3 mm) collected together with the holotype on 8 May 1984. Total length 119 mm. Weight 7.2 g. Skull ossified. Moulting crown, throat, back, breast and the right central rectrix.

Museu Nacional No 34044. Inactive adult female (ovary 3 mm) collected together with male No 34042 on 9 May 1984. Total length 115 mm. Weight 6.8 g. Skull ossified. Moulting crown, back, secondaries and the 3 outer primaries.

Museu Nacional No 34045. Young male from the type locality, collected 20 November 1983. Total length 124 mm. Weight 8.0 g. Skull non-ossified. Moulting neck, secondaries and under wing coverts.

Distribution. Known only from the type locality. The first *Phylloscartes* from northeastern Brazil.

Description of Holotype. For some colours I use the code in Villalobos & Villalobos (1947). Crown, mantle, back, rump and upper tail coverts dark green (L-9-3°), the feathers inconspicuously streaked with matt black along the basal portion of the rachis. Superciliary stripe, face and ear coverts whitish, the latter 2 areas conspicuously marked with ashy black in a rather intricate pattern: an ocular stripe (through the eye) is connected to the upper portion of a crescent formed by the ashy black tips of the ear coverts, the lower end of which is continued as a narrow line, curving forward and upward to join the ocular stripe in the lores near the eye; behind the eye, the ocular stripe and this curved line are interconnected by a narrow oblique stripe (Fig. 1).

Throat, foreneck and breast whitish, washed with dark green on the sides of breast; rest of underparts white, washed with a very light lemon yellow (YYL-19-12°) on the abdomen and crissum. Lesser upper wing coverts dark green with blackish bases. Alula, median and greater (upper) wing coverts of outer primaries black bordered with dark green; the other median and greater

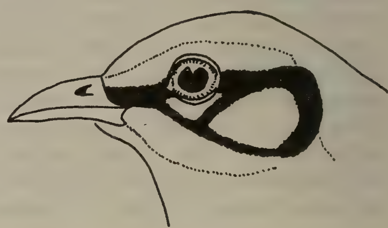

Figure 1. The head of *Phylloscartes ceciliae* sp. nov. emphasising the ashy black markings (see text). Holotype (MN No 34041) adult male. (Drawing by J. Nacinovic.)

(upper) wing coverts are black with a broad light greenish yellow (YYL-18-8°) tip, forming a conspicuous double wing bar. Primaries and outer secondaries black with yellowish green (YL-16-11°) fringes and with the inner web bordered with whitish. Inner secondaries similar, but with the yellowish green fringes becoming a broad white terminal spot on the outer web of the feather. Wing lining and under wing coverts whitish washed with lemon yellow like the abdomen. Tail black with yellowish green borders to the rectrices. Iris chestnut; bill black; tarsus dark bluish grey.

As noted in other species of *Phylloscartes* (*apud* Hellmayr 1927), the males, females and immatures of *P. ceciliae* appear identical in plumage, and it was impossible to observe any significant difference between the holotype and the above mentioned paratypes. Regarding the soft parts, all adult paratypes have iris, bill and tarsus the same colour as the holotype. Only the immature specimen collected (MN No 34045) has the bill blackish, with the tomia and base of the mandible horn whitish; tarsus grey instead of bluish grey.

Diagnosis. Differs from all other 9 South American species of *Phylloscartes* (not including *Pogonotriccus, Leptotriccus* and *Capsiempsis,* as proposed by Traylor 1977, 1979) by the combination of whitish underparts with the presence of 2 wing bars, plain dark green upperparts and the pattern of head and face. The general aspect of its plumage resembles *Phylloscartes difficilis,* which also has whitish underparts but is easily distinguishable from *P. ceciliae* by the absence of wing bars. Also *Phylloscartes nigrifrons* has whitish underparts and even a double wing bar, but its head pattern (frontal band black, cap grey etc) is obviously different.

The other 7 South American species of the genus *Phylloscartes* (*sensu stricto*) differ from *P. ceciliae* in many characters. *P. oustaleti* and *paulistus* have no wing bars, their underparts are yellow and the facial pattern quite distinct. *P. ventralis* has 2 yellowish wing bars, but its underparts are yellow and the facial pattern distinct. *P. roquettei* has a double wing bar, but its underparts also are yellow, and the forehead, lores and ocular region are rufous. *P. virescens* and *chapmani* also have a double wing bar (ochraceous instead of yellowish in the latter species), but their underparts are mainly yellow and with a greyish white chin (*P. chapmani*) or throat (*P. virescens*). Finally *P. superciliaris* has no wing bars, its crown is greyish black to grey, its lores and eyebrow are rufous etc. (See also Meyer de Schauensee 1970 and Meyer de Schauensee & Phelps Jr. 1978).

Measurements (mm). Holotype (MN 34041) adult male: exposed culmen 10.5; wing (flat) 58.0; tail 57.7; tarsus 16.7.

Paratype (MN 34042) adult male: exposed culmen 10.7; wing (flat) 56.5; tail 56.4; tarsus 17.5.

Paratype (MN 34043) adult female: exposed culmen 9.1; wing (flat) 50.6; tail 50.2; tarsus 16.7.

Paratype (MN 34044) adult female: exposed culmen 9.8; wing (flat) 51.3; tail 51.5; tarsus 16.1.

Paratype (MN 34045) young male: exposed culmen 10.3; wing (flat) 52.3; tail 53.8; tarsus 16.6.

Compared with *P. difficilis,* the measurements of *P. ceciliae* show no significant difference. The males seem to be slightly larger than females, which is shown in the total length and weight of collected specimens (see above). The measurements of both sexes of *P. ceciliae* are compared in Table 1.

TABLE 1

Measurements (mm) of *Phylloscartes ceciliae* sp. nov.

	Males (n = 3)			Females (n = 2)		
		$\overline{X}$	SD		$\overline{X}$	SD
Wing (flat)	58.0–52.3	55.6	2.41	51.3–50.6	50.9	0.35
Tail	57.7–53.8	55.9	1.62	51.5–50.2	50.8	0.65
Tarsus	17.5–16.6	16.9	0.40	16.7–16.1	16.9	0.20
Exposed culmen	10.7–10.3	10.5	0.16	9.8–9.1	9.4	0.35

Additional remarks. P. ceciliae seems to be an endemic of highland forest (550 m) in northeastern Brazil, where it is rather common, at least in the type locality; however, it is difficult to locate on account of its small size and arboreal habits, inhabiting the tops of medium strata trees. Like other species of the genus, *P. ceciliae* often joins mixed flocks of other Tyrannidae (*Rhytipterna simplex, Contopus cinereus, Elaenia* sp.), and also Dendrocolaptidae (*Lepidocolaptes fuscus*), Furnariidae (*Philydor novaesi, Automolus leucophthalmus*), Formicariidae (*Thamnomanes caesius, Myrmotherula unicolor, Herpsilochmus rufimarginatus, Terenura sicki*), Sylviidae (*Ramphocaenus melanurus*) and Coerebidae (*Coereba flaveola*). *P. ceciliae* scans the surface of leaves and branches for small insects, which compose its diet. If excited, this bird keeps its tail obliquely pointed up, as noticed in other species of the genus (*P. difficilis, P. ventralis*). The vocalizations of *P. ceciliae* are not characteristic:– a peeping sequence "djü, djü . . ." sometimes sharper and faster "ürürüt, ürürüt . . ." and an inconspicuous and isolate "thüp".

Very little is known of the breeding biology of *Phylloscartes* as a whole (see Ihering 1904 and Rodolfo de la Peña 1979), and *P. ceciliae* is no exception. The immature bird (MN No 34045) collected on 20 November 1983 was being fed by 2 adults in the tree tops. The small size of gonads of the adults collected in May 1984, and also the intense moult recorded for these specimens, suggest a breeding period between September and February, as observed for other northeastern Brazilian forest birds. Perhaps pairs of *P. ceciliae* remain together longer than expected, since pairs were collected in May 1984 following mixed flocks, and several other possible pairs were observed, also following mixed flocks, in May and April 1984.

Even though *Phylloscartes* is a widely distributed genus in South America, it was not previously reported from northeastern Brazil. Four of the 9 South American species occur in Guianan forests (*P. virescens*), in the tepuis of the borders between Brazil and Venezuela (*P. chapmani* and *P. nigrifrons*), and in northwestern Venezuela and Colombia to Central America (*P. superciliaris*). Three others are endemic to the Atlantic forests south of the São Francisco River: 2 in southeastern Brazil (*P. difficilis* and *P. oustaleti*), and also one extending into eastern Paraguay (*P. paulistus*). The remaining 2 South American species have a peculiar distribution: *P. roquettei* is known only from Brejo Januária, western Minas Gerais; and *P. ventralis* occurs from central Peru to northern and eastern Bolivia, Paraguay, northern Argentina and eastern Brazil, from Minas Gerais to Rio Grande do Sul (see also Meyer de Schauensee 1966, Pinto 1944).

As mentioned by Teixeira *et al.* (1986), the endemic bird species of northeastern Brazilian highland forests are more closely related to those of Atlantic forests south of the São Francisco River than to the "Amazonian"

avifauna of the adjacent lowland forests. The discovery of *P. ceciliae* as an endemic species of the highland forests seems to reinforce this proposal, since preliminary studies indicate that this new species is apparently closely related to *P. difficilis,* an endemic species from the coastal mountains of southeastern and southern Brazil (from Minas Gerais and Rio de Janeiro to São Paulo and Rio Grande do Sul, *apud* Pinto 1944, Sick 1984 and Belton 1985). The same pattern (2 vicariant taxa, replacing each other north and south of the São Francisco River) was also observed in other cases (*apud* Teixeira & Gonzaga 1983a, b, 1985). This phenomenon is also very well marked by the discovery, in the highlands, of several birds never previously reported north of the São Francisco River (Teixeira *et al.* 1986).

Finally, we would like to stress that the Atlantic forests of northeastern Brazil are today in the final stages of destruction. Without a radical reversal of current trends, the last forest remnants are unlikely to survive more than a few years and the establishment of protected areas for both lowland and highland forest endemic avifauna is an urgent need.

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Notes on the plumages of *Diglossa duidae* with the description of a new subspecies

by Robert W. Dickerman

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The Scaled Flower-piercer *Diglossa duidae* was described by F. M. Chapman (1929) as a new species known only from Cerro Duida, Territorio Amazonas, in the tepui region of southern Venezuela. Subsequently the species was found on most of the high isolated tepuis of the western (Territorio Amazonia) portion of the Pantepui region (Mayr & Phelps 1967). Two subspecies have been described; *hitchcocki,* type locality Cerro Yavi (Phelps & Phelps 1947) and *parui,* type locality Cerro Paru (Phelps & Phelps 1950). The latter was placed in the synonymy of nominate *duidae* by its authors (Phelps & Phelps 1963). During February and March 1984, additional specimens of the species were secured on Cerro de la Neblina in extreme southern Venezuela. Comparisons were made of those specimens with material in the American Museum of Natural History (AMNH), and in the Coleccion Phelps of Caracas.

Plumages. Chapman (1929) mentioned that about one third of the 49 specimens of *D. duidae* he examined had white tipping on the greater and median wing coverts, but did not relate the character to age. Phelps & Phelps (1947, 1950) demonstrated that immature birds had white wing bars and mentioned 64 specimens that they examined in the AMNH collection. In fact the original series collected by the Ollala brothers, contained over 350 specimens of *D. duidae.* Of these, 79 were apparently catalogued immediately, and include the 49 cited as ''specimens examined'' in the description; the remaining specimens were not catalogued until the 1970's, although they apparently were stored in the main collection. In the entire series there are over 50 specimens in the as yet undescribed juvenal plumage, and there are specimens in all stages of the first prebasic moult.

Juveniles are dull Blackish Neutral Gray (capitalized colour names are from Smithe 1975 and 1981), lacking a bluish cast, and are near black on the crown. Ventrally they lack the scaled appearance of the basic plumage described by Chapman. They are a uniform Medium Neutral Gray on the flanks and undertail coverts and Pale Neutral Gray on the belly, darkening to Dark Neutral Gray on the throat and upper breast. The grey colours of the venter have a slight brownish cast that is probably due to foxing since the specimens were collected in 1929. No juveniles were prepared as study skins in 1984.

The sharply pointed juvenal rectrices and the remiges and their coverts are retained into the first basic plumage. However, the coverts may be gradually replaced during the first year as specimens in worn plumage with identifiable juvenal rectrices may have a few or most of the white-tipped coverts replaced with less-worn slate-blue feathers.

Foxing in the definitive plumage of material collected 30 years ago is slight when compared with specimens collected in 1984; however there is a dulling of the bluish cast dorsally, and a browning of the crisp blue-greys of the ventral scalloping, changes which are sufficient to prevent comparisons between recently taken and older specimens. When comparisons were made among specimens of older series (i.e. specimens which had undergone comparable

degrees of change), the enlarged series of specimens from Cerro Neblina proved to be of an unnamed form, which now may be known as:

Diglossa duidae georgebarrowcloughi subsp. nov.

Holotype. Adult male AMNH 815628, La Cumbre, Cerro Jime (=Cerro de la Neblina), Territorio Amazonas, Venezuela, collected 22 January 1954 by Kathleen Deery de Phelps.

Diagnosis. Definitive plumage similar to *D.d. duidae* but duller black (less bluish) dorsally, somewhat greyer (less bluish) ventrally; paler on flanks and breast than *hitchcocki,* with throat and neck less extensively black.

Range. Known only from Cerro de la Neblina.

Etymology. Named for George F. Barrowclough in recognition of his contributions to the study of the birds of Cerro de la Neblina and his joy in field research.

Specimens examined. For preliminary examination, I had available in New York over 80 specimens from Cerro de la Neblina from the Coleccion Phelps for comparisons with the large type series of *duidae.* 48 reliably sexed specimens from Cerro de la Neblina were measured, and 10 in good plumage (including the type) were selected for final colour comparisons. The nine paratypes are AMNH 815627, 815629 and 815630 and Coleccion Phelps 60216, 60219, 60221, 60227 and 60229. The type and 14 specimens of *duidae* in unworn basic plumage (including the type of *parui*), and the type and 11 specimens of *hitchcocki,* all 30-57 years of museum age, were used in making final colour comparisons. Recently taken specimens are not available from Cerros Yavi and Duida for comparison with the 1984 specimens from Cerro de la Neblina.

Discussion. The bills of male *georgebarrowcloughi* and *hitchcocki* average longer (visible in series) than in *duidae.* The respective measurements, range (mean), and standard deviation, for 30, 31 and 8 specimens were 9.1-10.3 (9.75), SD 0.39; 8.2-10.0 (9.26), SD 0.40 and 9.2-10.6 (9.83), SD 0.47. It is interesting to note that the peripheral subspecies *hitchcocki* and *georgebarrowcloughi* both retain the dull black dorsal coloration of the juvenal plumage.

Acknowledgements: I wish to express my appreciation to William H. Phelps Jr for his support for this research programme and for his manifold courtesies, and to the Coleccion Phelps and Ramon Avelado for the loan of material. The 1984 specimens examined were from the collections of the Museo Biologico, Universidad Central de Venezuela, the Field Museum of Natural History, and the US National Museum of Natural History. The biological exploration of Cerro de la Neblina was carried out under the auspices of the Fundacion Para El Desarollo de las Ciencias Fisicas, Matematicas y Naturales de Venezuela, and was supported in part by NSF Biological Research Resources Program grant BSR-83-17687. K. C. Parkes critically and helpfully reviewed the manuscript.

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AVIAN FAMILY-GROUP NAMES

The Standing Committee on Ornithological Nomenclature of the International Ornithological Committee has prepared a list of established names of avian family-group taxa (subtribes to superfamilies) and their synonyms as the first step in process of writing an application to the International Commission on Zoological Nomenclature to stabilize use of these names. The SCON wishes to obtain the views on this list of all interested ornithologists and zoologists, and will make the list available to all those who are willing to examine it carefully and to provide the SCON with corrections, additions, comments and suggestions. This list of avian family-group names is unofficial and should not be used for any purpose other than that indicated above. Copies of the list may be obtained by writing to Professor Walter J. Bock, Chairman SCON, Department of Biological Sciences, Columbia University, New York, NY 10026, USA.

Books Received

Génsbøl, B. 1986. *Guide to the Birds of Prey of Britain and Europe, North Africa and the Middle East.* Translated by Dr Gwynne Vevers. Pp. 384. Illustrated by B. Bertel, plus 183 colour and black-and-white photographs, 42 distribution maps and charts. Collins. £14.95 hardback. 12.5 x 20 cm.

A thick pocket-sized guide covering comprehensively the 46 species of birds of prey recorded as breeding in the area covered. Introductory sections include raptor adaptations, food, migration, conservation and persecution. The main text gives details of these aspects for each species and an analysis of population trends and habitat changes. There follow 90 pages on the identification of each species with black-and-white illustrations. The whole adds up to a useful and competent guide, and the photographs are outstanding.

Harbard, C. 1986. *Evenings at the Coot and Corncrake.* A Birdwatchers quizz book. Pp. 128. Illustrated. Collins. Paperback. £2.95. 19.5 x 12 cm.

The author provides some amusing and highly imaginative well told tall stories in a twitchers' (listers') setting in a convivial country pub. There are deliberate howlers as well as interspersions of quizzes and other puzzles, all with answers at the end of the book. Judging by the author's denials, several individuals seem likely to recognise themselves in the caricature characters created.

Smout, Anne-Marie. 1986. *The Birds of Fife.* Illustrated by D. Mitchell. Pp. 274. John Donald. Paperback. £7.50. 21.5 x 14 cm.

A well produced, evidently well researched avifauna of this small county on the northern shore of the Firth of Forth in an easy readable style. An interesting 22 page Introduction, covering the topography and ornithological history of the county, is followed by the Systematic List giving the past and present status in some detail of 282 species (the Isle of May is excluded) with separate maps, where needed, for breeding and winter distribution. There is a useful bibliography and gazetteer. The illustrator takes an attractively chubby view of his birds. Commendable.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely to the *Bulletin.* They should be typed on one side of the paper, with double-spacing and a wide margin, and submitted with a *duplicate copy on airmail paper.* Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin.* Informants of unpublished observations should be cited by initials and name only, e.g. ". . . catches wasps (B. Eater)", but "B.B.C. Gull informs me that . . .". Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction. Authors are requested to give their title, initials, name and full address (in the form they wish to be corresponded with) at the end of the paper.

An author wishing to introduce a new name or describe a new form should append *nom., gen., sp.* or *subsp. nov.,* as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of Type" and "Material examined", plus any others needed.

A contributor is entitled to 10 free reprints of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional reprints or reprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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MEMBERSHIP

Only Members of the British Ornithologists' Union are eligible to join the Club: applications should be sent to the Hon. Treasurer, Mrs D. M. Bradley, 53 Osterley Road, Isleworth, Middlesex TW7 4PW, together with the current year's subscription. The remittance and all other payments to the Club should always be in *sterling* unless an addition of £1.50 is made to cover bank charges for exchange, etc. Payment of subscription entitles a Member to receive all *Bulletins* for the year. Changes of address and revised bankers' orders or covenants (and any other correspondence concerning Membership) should be sent to the Hon. Treasurer as promptly as possible.

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CORRESPONDENCE

Correspondence about Club meetings and other matters not mentioned above should go to the Hon. Secretary, R. E. F. Peal, 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR.

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The *Bulletin* is now being sent by Bulk Air Mail to all European destinations outside the British Isles and by Accelerated Surface Post to almost every destination outside Europe. This will only apply to copies despatched from the printers on publication. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid.

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Bulletin of the

British Ornithologists' Club

Edited by

Dr J. F. MONK

Volume 107 No. 2

June 1987

FORTHCOMING MEETINGS

THURSDAY, 16 JULY 1987 at 6.15 pm for 7 pm in the **Ante-Room, (Ground Floor, Sherfield Building,) Imperial College, S.W.7, Mr R. E. Scott** will speak on **"Israel and its birds".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on 2 July, if possible*.

Bob Scott, Senior Reserves Manager of the R.S.P.B. and a long-standing Member of the Club, is well known to many Members and we are very pleased to have the opportunity of hearing him speak on this subject.

PLEASE NOTE THE CHANGE IN DATE OF THIS MEETING AS WELL AS OF SPEAKER, FOR REASONS BEYOND OUR CONTROL.

Tuesday, 15 September 1987 at 6.15 pm for 7 pm in the **Senior Common Room, Sherfield Building, Imperial College, S.W.7, Lieutenant-Colonel C. N. Clayden** will speak on **"Birds on Ministry of Defence Property".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the **HON. TREASURER at 53 OSTERLEY ROAD, ISLEWORTH, MIDDLESEX TW7 4PW** by first post on Tuesday, 1 September, if possible*.

Colonel Clayden, who has recently retired from being Ministry of Defence Conservation Officer and is Secretary of the Army Bird Watching Society, will speak on the birds of these substantial areas of land, which are closed to the public and where birds are not exposed to normal disturbance.

Tuesday, 24 November 1987 at the same venue, **Dr David T. Parkin** will speak on **"Genetic fingerprinting of wild birds – a new way of looking at bird populations".**

Tuesday, 19 January 1988 at the same venue, **Dr D. W. Snow** will speak on **"The B.O.U. Expedition to Colombia – a progress report".**

Tuesday, 16 February 1988. Dr David Nettleship will show **two of his colour films of Atlantic seabirds** in the Lecture Theatre of the British Museum (Natural History) at 6 p.m., after which there will be dinner at Imperial College and he will speak on **"Present status and prospects of seabirds in the N.W. Atlantic".**

*It will be possible to take acceptances up to the weekend before the Meeting, but Members are asked to accept by 14 days before the Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 107 No. 2 Published: 19th June 1987

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the South Side Suite, Imperial College, Prince's Gardens, London, S.W.7 at 6 pm on Tuesday, 12 May 1987 with the Revd. G. K. McCulloch in the Chair. Six Members were present.

Apologies for absence were received from the Editor and the Hon. Treasurer.

The Minutes of the Annual General Meeting held on 13 May 1986 (*Bull. Brit. Orn. Cl.* 106: 41) were approved and signed by the Chairman.

The Report of the Committee for 1986 and the Accounts for 1986 were presented by the Hon. Secretary. It was explained that the entry for "Sales of Bulletin" referred to sales of back numbers, which were liable to fluctuate much from year to year. On the proposal of Mrs A. M. Moore, seconded by Mr D. R. Calder, they were unanimously received and adopted.

There being no additional nominations, the following were declared duly elected:

Honorary Treasurer:	Mrs D. M. Bradley (re-elected)
Honorary Secretary:	Mr R. E. F. Peal (re-elected)
Committee:	Mrs A. M. Moore (*vice* Mr D. R. Calder, who retired by rotation and was ineligible for re-election)

The Meeting closed at 6.10 pm.

The seven hundred and seventieth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 10 March at 7 pm. The attendance was 28 Members and 12 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, P. J. BELMAN, K. F. BETTON, Mrs D. M. BRADLEY, D. R. CALDER, Dr N. J. COLLAR, P. J. CONDER, J. H. ELGOOD, Sir HUGH ELLIOTT, Miss C. T. FISHER, A GIBBS, D. GRIFFIN, P. A. D. HOLLOM, R. H. KETTLE, A. G. KNOX, Dr J. F. MONK, Mrs AMBERLEY MOORE, R. G. MORGAN, Dr P. MORRIS, Mrs M. N. MULLER, R. E. F. PEAL, D. S. SALT, P. J. SELLAR, N. H. F. STONE, A. R. TANNER, C. F. TURNER, Dr C. G. VIOLANI and M. P. WALTERS.

Guests present were: D. BRADLEY, G. CLOAKE, D. COUZENS, Lady ELLIOTT, Miss JANE FENTON, Mrs A. G. KNOX, G. MAGNIN, Mrs ISABEL McCULLOCH, P. J. MOORE, Mrs JOYCE POPE, R. RANFT and Dr WIM VERHEUGT.

Dr Carlo Violani gave an illustrated address on "Current studies on the birds of Sardinia", which was much appreciated. An abstract of this will be published in a future number of the *Bulletin*.

Income and Expenditure Account for the year ended 31st December 1986

	1986 £	1986 £	1985 £	1985 £
INCOME				
Subscriptions received				
Members' subscriptions	2,946		2,306	
Subscribers	2,392	5,338	1,769	4,075
Donations received		17		14
Investment Income				
Stevens Bequest Fund	154		153	
Deposit Interest	2,517		2,407	
Barrington Trust Fund	48	2,719	48	2,608
Rent Received				
Property – Clovelly, Tring	2,080		1,823	
Less: costs	112	1,968	1,458	365
Income Tax Recovered				
Deeds of Covenant	256		212	
Other	65	321	65	277
Sales of Bulletin		232		1,191
Meetings—Income	1,742		1,482	
Expenditure	1,793	(51)	1,606	(124)
		10,544		8,406
Expenditure				
Printing, Publication of Bulletin	6,408		5,024	
Separates	525		416	
	6,933		5,440	
Less: Author's costs	280		320	
	6,653		5,120	
Postage of Bulletin	751		489	
Publication and Distribution Costs re Current Issues of Bulletin	7,404		5,609	
Printing, Postage and Stationery	464		392	
Telephone	65		51	
Insurance	13		25	
Notice of Meetings	118		102	
Audit and accountancy	130		100	
Miscellaneous Expenses	69		70	
Bank Charges	14	8,277	4	6,353
Excess of Income over Expenditure		£2,267		£2,053

Balance Sheet as at 31st December 1986

	1986 £	1986 £	1985 £	1985 £
General Fund				
Balance at 31st December 1985	18,938		16,885	
Add: Excess of income over Expenditure	2,267	21,205	2,053	18,938
Trust Fund—F. J. F. Barrington Legacy				
Balance at 31st December 1986		445		445
Stevens Bequest Fund				
Balance at 31st December 1986	60,256		2,256	
Add: Transfer of Freehold Property	—	60,256	58,000	60,256
		£81,906		£79,639
Represented by:				
Stevens Bequest Fund Investment				
£2,101 10¼% Exchequer Stock 1986 at cost		2,019		2,019
Barrington Trust Fund Investment				
£880 5½% Treasury Stock 2008/12 at cost		445		445
Freehold Property		58,000		58,000
		60,464		60,464
Current Assets				
Stock of Bulletin—Nominal Value	1		1	
Cash at Bank—Current Account	1,130		178	
Post Office Giro	975		577	
Deposit Account	6,347		6,266	
National Savings Bank	18,938		15,804	
	27,391		22,826	
Current Liabilities				
Subscriptions received in advance—Members	732		424	
Subscribers	1,824		1,073	
Sundry Creditors	3,393		2,154	
	5,949	21,442	3,651	19,175
		£81,906		£79,639

Accountant's Certificate

In accordance with your instructions we have prepared, without carrying out an audit, the accounts for the year ended 31st December 1986 set out on the attached pages, from the accounting records information and explanations you have supplied to us.

Hereford House, Hereford Gardens,
Pinner, Middlesex HA5 5JR 2nd March 1987

SEARLE AND COMPANY
Chartered Accountants

We approve the attached accounts for the year ended 31st December 1986 and confirm that to the best of our knowledge all transactions relating to the Club have been recorded.

G. K. McCULLOCH *Chairman*
D. M. BRADLEY *Treasurer*

2nd March 1987

The seven hundred and seventy-first Meeting of the Club was held in the South Side Suite, Imperial College, Prince's Gardens, London, S.W.7 on Tuesday, 12 May 1987 at 7 pm. The attendance was 14 Members and 11 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, M. A. ADCOCK, P. J. BELMAN, D. R. CALDER, Dr R. A. F. COX, D. GRIFFIN, A. J. KENCH, R. H. KETTLE, Mrs AMBERLEY MOORE, R. G. MORGAN, R. E. F. PEAL, G. ROWE, N. H. F. STONE and A. R. TANNER.

Guests present were: Mrs BERYL ADCOCK, P. J. BULL, Mrs J. B. CALDER, Professor F. COOKE, Dr N. F. DAVIES, Mrs FIONA FARNSWORTH, Mrs NANCY LIDELL, Mrs ISABEL McCULLOCH, Miss MARILYN MacDONALD, P. J. MOORE and Mrs ELIZABETH PEAL.

Professor F. Cooke gave an address on "Birds of the Arctic", which was followed by a discussion of much interest. An abstract of his address will be published in a future issue of the *Bulletin*.

New evidence for sympatry in the sibling species *Caprimulgus atripennis* Jerdon and *C. macrurus* Horsfield

by S. Dillon Ripley and Bruce M. Beehler

Received 17 June 1986

In his revision of the subspecies of the South Asian nightjar, *Caprimulgus macrurus* Horsfield, Mees (1977) found that the anomalous southern Indian population *atripennis* Jerdon appeared to overlap geographically with that of the northern Indian population *albonotatus* Tickell without noticeable intergradation. The subsequent appearance of new information on the biology of the 2 populations, supplied in part by Marshall (1978), influenced Mees (1985) to reconsider his original decision and to give *atripennis* full species status. In arguing for this, Mees supported his belief with data on size, apparent geographic overlap, voice and egg colouration.

The weakest aspect of Mees's data related to geographic distributions, because of the paucity of specimen records from the region of the Eastern Ghats, where both birds have been collected (see Mees 1977: 17, Fig. 2). In no instance were both forms collected from the same locality, and there was some concern that the seasonal movement of individuals might confound the determination of breeding distributions.

In a recent series of expeditions to the Eastern Ghats of Andhra Pradesh (cf. Ripley & Beehler 1985, Ripley *et al.* in press) we obtained a single specimen each of *albonotatus* and *atripennis* at 800 m a.s.l. from Wangasara, Chintapalli Taluk, Visakhapatnam District (17°54′N, 82°25′E). Both were males in breeding condition, and were collected within a kilometre of each other in the disturbed habitat of a large coffee estate. Both were taken in early March 1985. The *albonotatus* specimen was collected on 8 March 1985, and that of *atripennis* on 6 March 1985. During this period, nightjars were vocal and active. We heard a variety of calling birds that we believed were the species *macrurus*, and at least 2 members of the field party opined that we were hearing 2 "types" of calls; but we made no attempt to associate particular calls with specific individuals nor did we make sound recordings. At that time we

were unaware of any systematic question regarding peninsular Indian populations of *Caprimulgus macrurus.*

A comparison of the 2 Wangasara specimens supports Mees's notion that there is no intergradation between the 2 forms. Our 2 specimens offer clear contrasts (Table 1):

TABLE 1

Mensural data of 2 recent specimens of *Caprimulgus* from Andhra Pradesh

	Wing	*Tail*	*Weight*	*USNM No*
albonotatus	198	164	79	585255
atripennis	181	125	55	585256

In addition, the 2 specimens exhibited the following plumage differences (in all cases *albonotatus* is listed first): (a) *crown pattern:* heavily streaked with slim, lanceolate, black stripes *vs* lightly streaked with teardrop-shaped black blotches; (b) *background colouration of crown:* heavily vermiculated with fine black specks *vs* nearly uniformly powdery-tan; (c) *collar of hind-crown:* yellowish-tan with abundant fine black transverse bars *vs* medium brown with no fine black barring; (d) *breast-band posterior to the white throat patch:* yellowish-buff with profuse, fine black barring *vs* uniformly grey-buff without fine black barring.

We agree with Mees's (1985) assessment that *atripennis* should be considered specifically distinct from *macrurus.* The 2 appear to be sibling species, *atripennis* being the south Indian humid forest ''vicariant'' of the widespread *macrurus* superspecies.

In his 1977 paper, Mees considered *aequabilis* Ripley a synonym of *atripennis.* After a comparison of new material of typical *atripennis* (USNM 585256, 585466) from Andhra Pradesh and Tamil Nadu with the holotype and 2 other specimens (USNM 263711, 248426) of *aequabilis* from Ceylon, we believe that the latter should stand as a distinct, though finely differentiated subspecies, as originally designated by Ripley (1945). The Singhalese form differs in being darker overall, but most clearly on the upperparts. This is especially noticeable on the mid-back and in the background colouration of the crown. The hind-collar of *atripennis* is richer brown and plain, whereas in *aequabilis* it is duller, narrower and broken by fine black streaks. The breast band in *atripennis* is plain, with minimal streaking or vermiculation; in *aequabilis* the band is greyer and marked by fine but definite black patterning. There is no difference in wing spotting between the two. Since the noticeably darker and greyer material from Ceylon is also the older material, we find unconvincing Mees' argument (1977: 13) that the apparent cited differences are ''to some extent due to fading''. Our findings agree well with those of Whistler (1944: 234), who examined series of both populations.

Thus the newly recognized species *atripennis* comprises both the populations from the Eastern and Western Ghats of peninsular India (the nominate form) and that of Ceylon (*aequabilis*).

Acknowledgements: We are grateful to the Department of Forests, Andhra Pradesh, for permission to conduct field research in their state. K. S. R. Krishna Raju kindly provided logistic support for our field efforts. Field research was funded by the Smithsonian Foreign Currency Program, administered by F. C. Berkowitz.

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Address: Drs S. D. Ripley and B. M. Beehler, NHB Room 336, Smithsonian Institution, Washington, DC 20560, USA.

Non-conspecificity of *Cossypha insulana* Grote and *Cossypha bocagei* Finsch & Hartlaub, with the description of a new subspecies of *Cossypha bocagei* from western Tanzania

by Alexandre Prigogine

Received 18 June 1986

Moreau & Benson (1956) arrived at the conclusion, based on characters, plumage and dimensions, that the robin-chats *Cossypha insulana* Grote and *C. bocagei* Finsch & Hartlaub are conspecific. This opinion has been accepted by most taxonomists, in particular by Chapin (*in* Moreau & Benson), White (1962), Hall & Moreau (1970) and Morony, Bock & Farrand (1975). Wolters (1980) however considers these birds belong to 2 distinct species of the genus *Sheppardia.* More recently, Wolters (1983) proposed a new genus for them, *Prosheppardia,* characterized by a white patch (often concealed) on the lore or a reduced superciliary stripe. *C. insulana* has a relatively large bill and the two species, *bocagei* and *insulana,* have relatively strong legs. The tail is short in *insulana,* as in *Orocossypha,* another new genus proposed by Wolters (1983).

Starting from the north, nominate *C. insulana* Grote (1935) is limited to Fernando Po. If, in conformity with Wolters (1983), the genus *Sheppardia* is used, *Sheppardia poensis* Alexander, 1903, is valid. The Cameroon montane forest is inhabited by *granti* Serle (1949); *schoutedeni* Prigogine (1952) was described from the region of Lutunguru, but another population of the same race was found later in the Itombwe Highland (Prigogine 1971) and there exists a specimen collected on the western slope of Ruwenzori (IRSNB); the form *kaboboensis* lives on Mt. Kabobo (Prigogine 1955); *kungwensis* Moreau (1941) exists on Kungwe-Mahari.

Nominate *bocagei* was described from Angola (Finsch & Hartlaub 1870). Benson (1955) separated the race *chapini* for northern Zambia, while Prigogine (1969) limited *hallae* to southern Zaïre.

Hall & Moreau (1970) mapped together "short-tailed" and "long-tailed" *Cossypha bocagei*. The locality indicated (map 152) just south of

Kungwe-Mahari, for a short-tailed *Cossypha bocagei* is an error. Yet, they mentioned that *bocagei (sensu stricto)* has a long tail but not a stout bill, while *insulana (sensu stricto)* in comparison has a shorter tail, longer legs and various amounts of olivaceous wash in the grey of the head (strongest in *granti* and *kungwensis)*.

Recent collections in Fernando Po and Cameroon, especially by Eisentraut (1968, 1973) and Jensen & Stuart (1986) furnished supplementary specimens of *insulana* and *granti*. Moreover, a series of *schoutedeni* has been collected in the last few years in the region of Maboya, south of Beni, and in the western part of the Itombwe Highland (Prigogine 1971). For this reason, it has appeared useful to check if the statement by Moreau & Benson (1956), considering *insulana* as conspecific with *bocagei*, is still valid. Difficulty results from the fact that the various populations of the 2 groups are allopatric. Consequently, the appreciation of the morphological differences is a matter of opinion.

Differences between the *bocagei* and *insulana* groups

The two groups, *bocagei* and *insulana*, differ as follows:

The *bocagei* group has a brown rufous lower eye-lid, while *insulana* can be distinguished, for adults of all populations, by the presence of a black lower eye-lid. The immatures of *insulana* have a light greyish lower eye-lid, recognisable in a *schoutedeni* specimen from Kiliza (IRSNB AP1392), still heavily spotted on the crown, and in a first-year specimen from Maboya (MRAC 118962). The black colour appears with age. The *insulana* group has a black upper eye-lid, except for immatures which have a greyish upper eye-lid. The *bocagei* populations are characterized by a dark grey upper eye-lid.

For all subspecies belonging to the *bocagei* group (nominate *bocagei, chapini, hallae*) the head is grey in sharp contrast with the green olivaceous mantle. On the other hand, the head colour of the different races of the *insulana* group is essentially variable: *granti* has an olivaceous head, with only a greyish wash; nominate *insulana* and *kungwensis* have an olive greyish head; *schoutedeni* has a dull grey blackish head, slightly tinted with olive; while *kaboboensis* has a blackish grey head. The change in colour between the head and mantle is very gradual for *insulana, granti* and *kungwensis,* but there is more contrast apparent in *schoutedeni* and it is quite marked in *kaboboensis*.

There is also a difference in the colouration of the underparts: in the *bocagei* group the underside is dull rufous-brown, with relatively little white in the centre of the belly; in the *insulana* group the underparts are brighter, with more white on the centre of the belly.

Table 1 gives mensural data for adults of the various populations, providing the following conclusions:

1. The *insulana* group has a shorter wing than the *bocagei* group.
2. The same is especially apparent for the tail length.
3. No differences are visible for the total culmen and the tarsus length.
4. On average, the tail/wing ratio is higher for the *bocagei* group.

TABLE 1

Measurements of adult *Cossypha insulana* and *bocagei* (mm)

MALES Population	N	Wing m – M (av.)	s	Tail m – M (av.)	s	Tarsus m – M (av.)	s	Total culmen[1] m – M (av.)	s	100 T/W m – M (av.)	s	100 Ta/W m – M (av.)	s	100 TC/W m – M (av.)	s
C. insulana															
insulana[2]	3	70–74 (72.0)		47–50 (48.8)		27–27.5 (27.2)		15.5–17 (16.2)		65.3–70.0 (67.8)		36.5–38.6 (37.8)		21.6–23.6 (22.4)	
granti	8	69–73 (71.0)	1.42	47–52 (49.3)	1.39	25–26.5 (25.8)	0.70	15–16 (15.8)	0.37	67.1–73.2 (69.4)	1.82	35.2–37.7 (36.5)	0.81	21.2–22.9 (22.3)	0.60
schoutedeni[3]	6	69–71 (70.0)	0.89	46.5–52 (49.3)	2.32	25.5–28 (26.6)	0.92	14–16 (15.1)	0.66	67.4–74.3 (70.6)	2.79	35.9–40.6 (38.0)	1.76	19.7–22.9 (21.6)	1.13
schoutedeni[4]	7	69–74 (70.1)	1.75	47.5–52 (49.9)	2.01	26.5–29 (27.6)	0.92	14–16 (15.3)	0.70	68.3–74.3 (71.6)	2.55	38.1–40.6 (39.3)	0.97	20.1–23.2 (21.8)	1.08
kaboboensis	3	71–78 (73.7)		54–57.5 (55.5)		27 (27.0)		16–17 (16.5)		73.7–77.5 (75.5)		34.6–38.0 (36.7)		22.2–23.9 (23.1)	
kungwensis	4	74–77 (75.3)	1.26	53–55 (54.3)	0.96	28–29 (28.4)	0.48	16–17 (16.5)		70.7–73.3 (72.1)	1.25	37.3–38.0 (37.7)	0.29	21.3–22.7 (22.1)	
C. bocagei															
hallae[5]	16	80–84.5 (82.4)	1.26	58.5–68 (63.8)	2.71	25–28 (27.1)	0.85	15–17 (15.8)	0.69	72.8–81.4 (77.5)	2.55	31.0–34.1 (32.9)	1.00	18.1–20.9 (19.2)	0.84
chapini[6]	4	79–81 (80.3)	0.96	58–66 (61.3)	3.40	26–28 (27.1)	0.85	15–15.5 (15.4)	0.25	72.5–81.5 (76.3)	3.77	32.9–34.6 (33.8)	0.83	18.5–19.6 (19.2)	0.48
bocagei[7]	7	79–82 (80.6)	1.27	62–69 (65.6)	2.78	27–30 (28.9)	1.21	15–17 (15.8)	0.94	78.5–84.6 (81.4)	2.34	33.8–37.2 (35.8)	1.23	18.3–21.5 (19.6)	1.18
ilyai	1	82		59		27		15.5		72.0		32.9		18.9	
FEMALES	N	m – M (av.)	s	m – M (av.)	s	m – M (av.)	s	m – M (av.)	s	m – M (av.)	s	m – M (av.)	s	m – M (av.)	s
C. insulana															
insulana[2]	4	66–68 (67.0)	0.82	42–46 (44.0)	1.83	25.5–27.5 (26.4)	0.85	15–16 (15.5)	0.58	63.6–68.7 (65.7)	2.30	38.1–41.0 (39.4)	1.21	22.1–23.9 (23.2)	0.90
granti	6	64–68.5 (66.4)	1.63	42–47 (44.0)	1.70	24–25.5 (24.8)	0.68	15–15.5 (15.1)	0.20	64.2–70.1 (66.1)	2.06	35.8–38.1 (37.4)	0.93	21.9–23.8 (22.7)	0.72
schoutedeni[3]	6	64–68 (66.2)	1.60	44.5–52 (46.6)	2.73	25–27 (25.9)	0.85	15–16 (15.3)	0.52	67.6–76.5 (70.4)	3.20	37.5–40.9 (39.2)	1.49	22.1–24.6 (23.2)	0.87
schoutedeni[4]	8	63–68 (66.2)	1.65	45–48 (46.3)	1.04	25–27 (26.2)	0.98	14–16 (15.1)	0.73	67.2–73.8 (69.9)	2.32	37.3–40.9 (39.4)	1.34	20.9–24.6 (22.8)	1.25
kaboboensis	4	66–70 (67.3)	1.89	47.5–50 (48.4)	1.11	26–27 (26.3)		15–16 (15.5)		70.9–72.7 (71.4)	0.92	38.6–39.4 (38.9)		22.4–24.2 (23.1)	
kungwensis	3	68–71 (70.0)		46.5–47 (46.9)		26–28 (27.2)		15.5–16		64.8–69.1 (66.7)		36.6–41.2 (38.8)		21.8–23.5	
C. bocagei															
hallae[5]	20	72–79 (75.1)	2.13	54–61 (56.8)	2.35	25–28 (26.4)	0.85	14.5–16 (15.4)	0.53	72.4–79.2 (75.8)	2.02	33.1–37.5 (35.2)	1.22	19.3–22.6 (20.5)	0.92
chapini[6]	4	73–79 (75.2)	2.87	55.5–62 (58.0)	2.86	26–28 (27.0)		15–15.5 (15.4)	0.25	76.0–78.5 (77.1)	1.14	32.9–37.0 (35.0)		19.6–21.2 (20.4)	0.66
bocagei[7]	4	76–77 (76.6)	0.48	59–60 (59.6)	0.48	27–28.5 (27.4)	0.75	15.5–16 (15.8)		76.6–78.9 (77.8)	1.04	35.1–37.5 (35.8)	1.17	20.1–21.1 (20.7)	
ilyai	2	74.5–75		51–53		26.5		15		68.4–70.6		35.3–35.6		20.0–20.1	

[1]Culmen from skull. [2]Eisentraut (1973) gives the following measurements: 6 males wing 71.5–73 (mean 72.4), tail 49–53 (50.7); 4 females wing 66–68 (66.9), tail 44.5–46 (45.3). [3]Northern population. [4]Southern population. [5]For the wing length of adult specimens Verheyen (1953) gives the following lengths: 10 males 81–84 (82.6); 10 females 73–78 (75.0). He adds that specimens in first-year plumage have shorter wings: 7 males 75–82 (79.0). [6]The following measurements are given by Benson (1955): 13 males wing 79–84, tail 59–67; 8 females wing 74–77, tail 54–59, while Traylor (1962) notes 4 males wing 82–83 (82.3), tail 62–67 (64.0); 3 females wing 75 (75.0), tail 56–60 (57.3). [7]For 4 males Benson (1955) indicates: wing 81–83, tail 65–69. Traylor (1962) gives the following lengths: 8 males wing 82–84 (83.3), tail 65–71 (68.9); 18 females wing 74–81 (77.5), tail 58–66 (61.3).

m=minimum, M=maximum, s=standard deviation, T/W=tail/wing ratio, Ta/W=tarsus/wing ratio, TC/W=total culmen/wing ratio.

5. The ratios tarsus/wing and total culmen/wing are higher for the *insulana* group, with some exceptions.

C. bocagei is a heavier bird. Verheyen (1953) indicates for 9 adult males 20-25 g, with a mean of 22 g, and 20-25 (21) g for 9 adult females. On the other hand, Eisentraut (1973) gives 17-19 (18.1) g for 6 *insulana* males, and 15-18 (16.5) g for 4 females. For 6 specimens of *granti* the labels indicate 16-20 (17.7) g.

Description of a new subspecies of *C. bocagei*

It is appropriate here to draw attention to an exceptional population which exists east of the region of Kungwe-Mahari, at altitudes of 1190-1340 m, in patches of evergreen forest or in riverine forest. Previously, this population has been attributed to *C.b. kungwensis* (Britton 1980). In reality, these specimens represent an undescribed subspecies of *C. bocagei* which I propose to name

Cossypha bocagei ilyai subsp. nov.

Description. Differs from *C.i. kungwensis* by its greater size (wing, tail), a dark olivaceous brown crown with a faint greyish wash and a gradual change from crown to mantle, which is lighter, more olivaceous; uppertail-coverts brown, less rufous and lighter; tail russet brown, less dark; lower eye-lid rufous brown; throat and chest of a duller rufous brown; flanks and undertail-coverts dark brown with an olivaceous tinge; centre of belly with less white. Compared with the hitherto known subspecies of *C. bocagei,* the head of *ilyai* is not grey; the back and the tail are darker, as are the flanks and undertail-coverts.

Distribution. Western Tanzania, in a limited area east of Kungwe-Mahari (6°12′S, 29°50′E).

Holotype. Adult male collected along Upper Niamezi (=Nyamanzi) River (5°55′S, 30°55′E), western Tanzania, 25 September 1943, for R. E. Moreau. In the collection of the British Museum (Natural History), Reg. No 1945.34.201.

Measurements of holotype. Wing 82, tail 59, tarsus 27, culmen from skull 15.5 mm.

Material examined. Known only by 3 specimens, all in the collection of the BMNH. An adult female from the type locality has the following measurements: wing 75, tail 53, tarsus 26.5, culmen from skull 15 mm. The third specimen, also an adult female, was collected c. 50 miles NE of Karema (c. 6°10′S, 30°50′E). Its measurements are: wing 74.5, tail 51, tarsus 26.5, culmen from skull 15 mm.

Remarks. The series of 3 specimens is very homogenous and shows constant morphological differences from *kungwensis;* it is possible to recognize *ilyai,* without doubt, especially by its underparts. The measurements of the holotype of *ilyai* are relatively small for the *bocagei* group, but several specimens of the race *hallae* have a wing of 80-82 mm, and 2 have a tail of 58-59 mm. I have examined females of *hallae* with a wing of 72-75 mm. However, the smallest *hallae* females measured have a tail of 54-55 mm, a little longer than the 2 known females of *ilyai.* Traylor (1962) notes that there is a cline of size, the Angola birds being on average larger,

especially in tail length. Nevertheless, the measurements of *ilyai* are nearer to the *bocagei* group than to the *insulana* group.

This new subspecies is dedicated to my brother Ilya for his exceptional contribution to science.

Discussion

It is not correct, as Moreau & Benson (1956) state, that the Kungwe and Kupe birds have at most a line of black feathers on the inferior eye-lid, and for this reason are intermediate between *insulana* and *bocagei*. The colour differences are strongly pronounced between the 2 groups, with the exception of *ilyai*, which belongs, without doubt nevertheless, to the *bocagei* group, in spite of some resemblance to *kungwensis*. The 2 populations, *C.i. kungwensis* and *C.b. ilyai*, are separated by c. 130 km, and are members of 2 different groups, which can show no interbreeding. The *bocagei* group, except *ilyai*, has normally a grey head in adults, in strong contrast with the olivaceous mantle. Yet, an adult female of *chapini* collected at Abercorn (BM 1955.41.34), about 300 km south of the range of the *ilyai* population, has a grey olivaceous head only gradually passing to the light olive mantle. This specimen seems intermediate with *ilyai* judged by the crown and upper-parts. Other specimens from southwestern Tanzania (Stjernstedt & Moyer 1982) have not been examined by me and it is not possible to state if the coloration of the bird from Abercorn is only individual or corresponds to the population found in northern Zambia and southwestern Tanzania.

Ecologically, the 2 robin-chats have different requirements. The *C. insulana* group is found in the lower stratum of montane forest. *C.i. granti* has been recorded from the undergrowth or near the ground of montane forest, at 600-1000 m, on the southern slopes of Mt. Cameroon and is widely distributed between 600 and 1700 m in the wetter forests of Cameroon (Stuart & Jensen 1986). The race *kungwensis* inhabits montane forest, at 2100-2400 m, *kaboboensis* at 1650-2450 m. *C. bocagei*, on the other hand, is encountered in a more open habitat, in patches of moist evergreen forest, at altitudes from 1600 to 2000 m (D. C. Moyer) and in riparian growth, feeding on the ground.

For all these reasons, it seems best to consider *Cossypha bocagei* and *C. insulana* as allospecies as already suggested by Wolters (1983). To explain the phylogeny of the 2 taxa, it is assumed that the direct ancestor of *C. bocagei* and *C. insulana* originated in the Albertine Rift refugium. During an earlier interglacial, proto-*bocagei* expanded its range to the southwest. After being isolated as a result of a dry period, there followed a progressive differentiation to present *C. bocagei*, the species becoming adapted ecologically to more open country, with a preference for wooded places, in a moist-typed savanna. After the departure of proto-*bocagei*, the appropriate ecological niches around the Albertine Rift were occupied by proto-*insulana*, which is now present on 5 massifs on which isolation has produced subspeciation in several montane forests. More recently, during a humid and warm period, *C. insulana* crossed the tropical forest and reached the Cameroon mountains and Fernando Po, where the isolation

time has not been sufficiently long to produce a differentiation exceeding subspeciation.

It is difficult to explain the presence of the *ilyai* population, which shows some approach to *kungwensis*. It is suggested that the robin-chats of the *bocagei* group spread out over the southern end of Lake Tanganyika and reached finally the region east of Mt. Kungwe, where they became isolated.

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Abreviations. BMNH: British Museum (Natural History); IRSNB: Institut royal des Sciences naturelles de Belgique; MRAC: Musée royal de l'Afrique centrale.

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J. T. Last and the type-locality of Benson's Rockthrush *Monticola bensoni*

by N. J. Collar and I. Tattersall

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Benson's Rockthrush *Monticola bensoni* was described by Farkas (1971) from 2 old specimens in the American Museum of Natural History "collected by Zaast at Ankarefu, Antinosy Cy, S. W. Madagascar". Farkas was unable to trace "Ankarefu" but mapped "Antinosy County" as in the far south of Madagascar (more in the southeast than the southwest, despite the "S.W." of the label); all Farkas's other records of the species were from the rocky, dry regions of the central-south and southwest of the country. Collar & Stuart (1985: 473-475), in treating Benson's Rockthrush as a threatened species (IUCN category "Insufficiently Known"), provided further records from the central-south and southwest of Madagascar; they pointed out that "Antinosy County" was probably a misreading of Antinosy country, and that, according to Deschamps (1960), émigrés of the Antanosy (the correct modern spelling) people of far southeast Madagascar had (in the nineteenth century or earlier) colonised an area of the southwest of the island, north of the Onilahy River at the southernmost end of the Isalo massif. They suggested that the type-material derived from this latter "Antinosy country" and noted that an "Ankarefo" is or was situated at 23°06′S, 46°06′E, some 100 km east of the Isalo massif.

More certain information on the origins of the type-material was impossible until more could be learnt of "Zaast". In the course of researching the 28 Madagascar species in Collar & Stuart (1985), N.J.C. read widely in the relevant nineteenth as well as twentieth century literature, and examined specimens in 9 western European museums, but never found mention of an explorer or dealer named Zaast, nor indeed of Antinosy or Antanosy County or country. It seemed possible that "Zaast" was a misreading of Lantz, who was keeper of the Réunion museum and made a collection of Madagascar birds in the 1860s (see Milon 1951: 153), or (van der) Henst, a member of the Leiden Museum team also operating in Madagascar in the 1860s and honoured in the name *Accipiter henstii* (Schlegel 1873: 62-63). However, G. S. Keith, with whom N.J.C. was in correspondence at the time, kindly

inspected the labels of the type-material and confirmed that the collector was unquestionably there named "Zaast".

After the publication of Collar & Stuart (1985), N.J.C. had occasion to look through Tattersall (1982), and there (pp. 104-105) noticed that the type-specimen of the lemur *Propithecus majori* (=*P. verreauxi verreauxi*) was collected by J. T. Last in "Antinosy Country" some time in or before 1894. The obvious likelihood that "Zaast" was Last led to N.J.C. and I.T. corresponding over Last's activities in Madagascar and to our pursuit of various leads in an attempt to resolve the questions surrounding the provenance of the *bensoni* type-material.

I.T. again checked the label of the type-specimen and the name there is indeed definitely "Zaast". However, this is patently a later transcription, and in the AMNH catalogue (whose entry for the specimen pre-dates the label) the name is written as "Loast", but in such a hand that it could easily be misread as "Zoast" or "Zaast"; and we assume that this itself was copied from some original documentation of the specimens which was written by someone who looped the capital L so that it could easily be misread as Lo.

In due course we discovered certain articles by Last (1894a, b, 1895, 1896), and his obituary (*Geogr. J.* 83 [1934]: 352). Joseph Thomas Last was 85 when he died in 1933. He began his career as a missionary in East Africa, but combined or at times replaced this vocation with that of zoological and botanical collector and explorer. He was, for example, the first of (so far as we are aware) only 2 men to explore Mount Namuli in Mozambique (Last 1887), the other being Vincent (1933-1935). He was Commissioner of Slavery in Zanzibar in the late 1890s and, according to a (not wholly accurate) entry in Desmond (1977: 372), he collected plants in Arabia in 1908-1910. The quality of detail in his articles on Madagascar suggest that he must have kept diaries of his travels, but inquiries to date have failed to reveal their existence.

Last (1895) closely documents at least part of his explorations in southwest Madagascar. As the title of his article suggests, his travels in "the Antinosi [*sic*] country" were an important component of his overall explorations of Madagascar, and his first sentence confirms that the area in question is "the south-central districts, inhabited by the Antinosi immigrants from the country near Fort Dauphin, on the south-east coast". His "primary object . . . was to make collections of Lepidoptera" but he also sought "other objects of natural history, and . . . general information about the country, people, and places as circumstances permitted". Fossils were among the objects sought, as is borne out by Last (1894a), and in an evaluation of one of Last's fossils, Forsyth Major (1894: 16) refers to him as "a collector of the Hon. Walter Rothschild". Perusal of Rothschild's journal *Novitates Zoologicae* reveals some evidence of this connexion (eg. 1: 70, *Pterogon lasti,* and 1: 666, *Propithecus majori*; 2: 23 has a footnote that the Antinosy country in question is not to be mistaken for the region in the far southeast of Madagascar).

Last (1895: 230) refers to his "nearly five years' residence in Madagascar", but the article in total appears to treat only the first 3 (indeed it ends so abruptly that one expects to find a continuation, but none appears to have been published). Last arrived in Madagascar in July 1889 (p. 227); he was at "Mahabu" town for Christmas 1890 (p. 242); he stayed there "a few weeks" (p. 242), spent 2 months around "the Berununu villages" (p. 243), about a month at "Nosi-vé" (p. 245), several months around "Salari" (p. 245); he made several short trips from Nosi-vé (p. 249) and then travelled

inland to the "Antinosi country" and in a week or so reached "Ilunti" (p. 250). He then remained at "Manansua . . . for some nine months, making short trips and camping about the [Antinosi] country in all directions" (p. 250), the article then closing with a description of his return journey down the "Ong'ulahi" (Onilahy) River to the coast. From this information, counting his "several months" around Salari as 10 weeks and his several short trips from Nosi-vé as 2 weeks, we judge that Last would have been in Antanosy country from approximately August 1891 to April 1892. (This would therefore leave another 2 years of his travels to be accounted for.)

That these dates are fairly accurate is supported by evidence in Last (1894a), a paper that was received and published in the first week of February and which refers first to his work in "Antinosi country", then to explorations along the southwest coast. These latter embraced a district where he found fossils "which I have sent home during the last two years" (p. 127), and he then confirms that the first of these particular fossils was sent home in 1892 (p. 128). There can be little doubt, therefore, that his 9 months based at "Manansua" in Antanosy country came to an end in the course (and probably in the first half) of 1892.

In December 1985 N.J.C. gave a public lecture which mentioned our interest in Last's itinerary through Madagascar, and afterwards P. J. Morgan informed him that Last's ornithological collection from Madagascar is in Merseyside County Museums, Liverpool. C. T. Fisher kindly provided a complete inventory of this material, amounting to some 84 specimens. Very few labels possess locality data, and all the dates (years only) were added by H. B. Tristram, to whom Rothschild evidently passed the great majority of the birds Last sent back. Two specimens are labelled "Ankarefu", one, a Madagascar Partridge *Margaroperdix madagarensis* (No 18547) not dated, and one, a White-browed Owl *Ninox superciliaris* (No 18350), dated 1893. C. T. Fisher comments that "Tristram seemed a bit arbitrary about whether he put 1892 or 1893 on his labels – they are all quickly scrawled and he could well have got the label on *Ninox superciliaris* wrong". Last (1894a) shows clearly that he did. (There are, incidentally, no new specimens of *Monticola bensoni* among the Liverpool material.)

The types of *Monticola bensoni* were evidently collected in the course of the 9 months spent in Antanosy country based at "Manansua". Last (1895) provided a detailed map (p. 300) of his itinerary through southwest Madagascar in the vicinity of the Onilahy River, and this includes the "Antinosi country" with the routes he took while exploring from Manansua. The routes in question cover the area (very roughly 30 km by 30 km) north of the Onilahy River between its southward-flowing tributaries, the "Tahéza" and the "Isakamare". One of these routes, running north and then northeast from Manansua, crosses an Ankarefu River, a northeast flowing tributary of the "Anantaki" River mentioned (as "Amantaki") in the text of his article (p. 250). Last's map shows a host of villages throughout the "Antinosi country", but the only other Ankarefu is another (southward flowing) river somewhat further to the east in a less clearly mapped region which, from the routes he provides, Last never visited. The Ankarefu River he crossed flows between hills marked "Tsitunganundri Range" to the north and "Itungani Hills" to the south, and the coordinates of the intersection of his route and the watercourse, read from his map, are 23°21′S, 44°59′E.

A modern map (Institut Géographique National à Tananarive 1964), on

which "Ilunti" appears as Elonty and the "Tahéza" and "Isakamare" as the Teheza and Sakamare Rivers, shows that the lines of longitude on Last's map were somewhat misplaced. The IGNT map marks a seasonal watercourse flowing northeast to the west of Elonty, and this is evidently what Last called the "Ankarefu River". The coordinates for the point of intersection of Last's route would be 23°21'S, 44°48'E. (The other, southward flowing "Ankarefu River", apparently not visited by Last, evidently gave its name to a village along its course – or vice versa – as the IGNT map shows an Ankarefo at 23°21'S, 44°56'E.)

We think it very probable that the type-material of Benson's Rockthrush was collected in the immediate vicinity of the locality signified by the coordinates 23°21'S, 44°48'E. However, it is always possible that the particular Ankarefu of the labels was elsewhere in the region. It is, however, established beyond doubt that the type-material was collected by J. T. Last, in either 1891 or 1892, somewhere in the 900 km^2 of terrain north of the Onilahy River whose centre, on modern maps, lies roughly at 23°25'S, 44°45'E, i.e. just southwest of the southern end of the Isalo massif. All records of Benson's Rockthrush therefore derive from between the Mangoky and Onilahy Rivers, with the general focus of distribution being the Isalo massif and its environs (see Collar & Stuart 1985).

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Notes on *Hirundo fuliginosa* and its status as a "cliff swallow"

by Roy A. Earlé

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The Afrotropical Dusky Swallow *Hirundo fuliginosa* is a little known species confined to the lowland forests of Cameroun, Equatorial Guinea and Gabon (Fig. 1). Although it is probably not at all rare (Good 1953), it is often confused with other, more common forest swallow species such as *Psalidoprocne nitens*, from which "they can hardly be distinguished in the

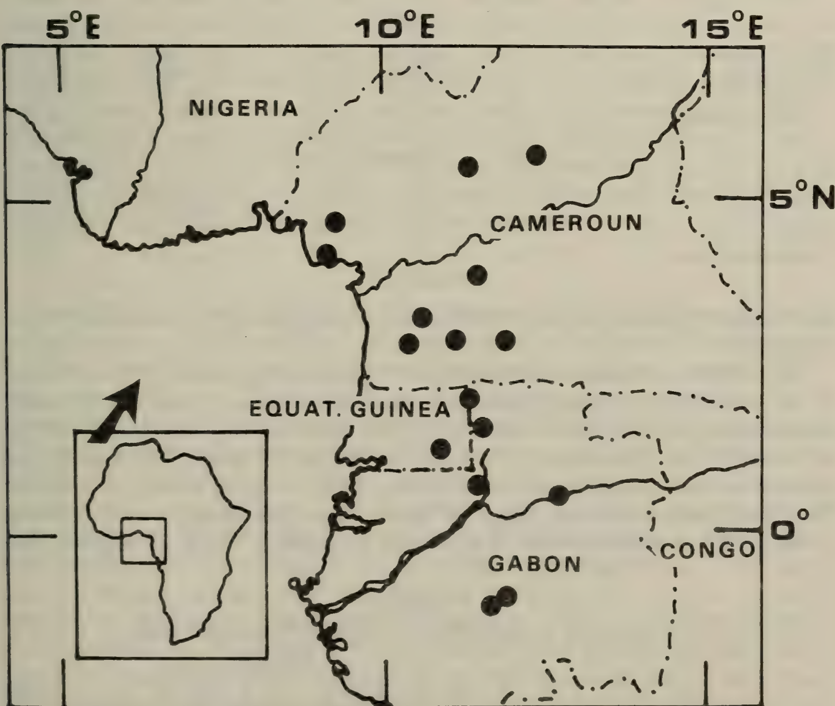

Figure 1. Map of equatorial West Africa with the localities from which *Hirundo fuliginosa* is known.

field unless it be by the very slightly forked tail [of *H. fuliginosa*]" (Bannerman 1951). *H. fuliginosa* probably benefits from the activities of man as it often uses man-made structures such as houses for nesting and roosting (Good 1953, Searle 1954).

Description, measurements and moult

Hirundo fuliginosa is wholly sooty-brown except for the throat, which has a brighter brown wash. The tail is only slightly forked and it thus superficially resembles the sympatric squaretailed *Psalidoprocne nitens*. Body measurements given in Table 1 show that there are no significant size differences between males and females. The mean sizes all fall well within

TABLE 1

Dimensions of male, female and unsexed *Hirundo fuliginosa*

Measurement (mm)	n	Mean	S.D.	Range	Median
Males					
Wing length	12	87.3	2.38	84.0–92.0	86.90
Tail length	12	44.9	2.62	40.2–49.5	45.05
Tarsus	12	10.1	0.57	9.2–11.2	10.05
Exposed culmen	12	6.1	0.29	5.4– 6.5	6.15
Females					
Wing length	7	89.4	1.75	86.0–91.0	89.00
Tail length	7	44.0	1.34	40.4–45.5	45.20
Tarsus	6	10.6	0.46	9.9–11.2	10.60
Exposed culmen	6	6.1	0.57	5.4– 7.1	5.95
Unsexed					
Wing length	7	88.2	2.74	85.0–92.0	88.00
Tail length	6	46.9	1.85	44.2–49.1	47.20
Tarsus	7	10.2	0.73	9.3–11.2	10.20
Exposed culmen	6	6.0	0.60	5.4– 6.8	5.85

the ranges given by Chapin (1925) in his original full description of the species.

Of the 28 specimens examined (see Acknowledgements), 9 were found to be moulting between June and October. Primary moult is typically descending (*sensu* Ginn & Melville 1983). The first 2 primaries, P1 & P2, are dropped simultaneously or nearly so. When these are fully grown, the central tertial drops, and only when fully re-grown does the inner (smallest) and then outer (largest) tertial drop. Secondary moult starts as soon as P6 is dropped and is typically ascending. Table 2 suggests that

TABLE 2

The timing of wing-moult and breeding in *Hirundo fuliginosa*

	Months												
	J	F	M	A	M	J	J	A	S	O	N	D	Total
Specimens examined (n)	2	0	1	0	1	5	6	5	3	3	1	1	28
Birds moulting (n)	0	0	0	0	0	2	3	2	1	1	0	0	11
Birds moulting (% of total)	0	0	0	0	0	22	33	22	11	11	0	0	99
Breeding records (n)	1	0	0	2	2	1	0	0	0	0	1	0	7

moult follows breeding, but not enough breeding data are available to substantiate this.

Breeding, nest and eggs

Hirundo fuliginosa has been found breeding in 5 months of the year (Table 2), with young in January and November and nests with eggs in April, May and June. Mackworth-Praed & Grant (1973), however, do not state if the young observed were nestlings or free flying. Searle (1954) also found egg laying in June, but courtship was observed in March.

The British Museum (Natural History) (BMNH) has 3 clutches of this species. These are of 3, 2 and 2 eggs respectively. The eggs were all collected near Yaoundé, Cameroun, on 6 and 13 April 1958 and 26 May 1958. All eggs are pure white and the mean measurements for 6 eggs are 18.3 x 12.9 mm (17.0–19.0 x 12.5–13.1). Searle (1954) gives the measurements of 6 eggs from a single pair as 19.6 x 13.0 mm (19.0–20.2 x 12.7–13.2), which is somewhat larger although not significantly so. Searle gives the egg colour as either "immaculate white, or white very sparingly and lightly spotted with pale orange-brown". One British Museum egg label also states "2 eggs – one heavily spotted with red mud". The labels with the 3 British Museum clutches all state "nest under (between) rocks in virgin forest", and one added "nest padded with kapok". No description of the nests are given with these eggs, but from Chapin (1948) it is known that they build mud nests which are described by Searle (1954) as "made of mud pellets, roughly hemispherical in shape with two very short spouted openings set diametrically opposite each other close to the rock". However, Mackworth-Praed & Grant (1973) also state that "the nest may consist of a pad only", but they give no further details. *H. fuliginosa* does not breed colonially but solitarily (Chapin 1948, Searle 1954).

Conclusion

Both Peters (1960) and Howard & Moore (1984) considered *Hirundo fuliginosa* as a "cliff swallow", thus placing it in the genus *Petrochelidon*. This was probably based on the original description by Chapin (1925), who remarked that "Among African swallows the general combination of structural features comes nearest to that of *Lecythoplastes* Reichenow, a hitherto monotypic genus closely allied to *Petrochelidon*". *Lecythoplastes* Reichenow, 1898, was seldom recognized as a good genus and the genotype *L. preussi* and also *fuliginosa* are usually associated with *Petrochelidon*. Mayr & Bond (1943) treated *Petrochelidon* as a subgenus, but Brooke (1972) retained it as a genus on the strength of its "red rump and a virtually square tail" and because it "does not build an entrance tunnel to its mud pellet nests". However, Phillips (1973) regarded *Petrochelidon* as inseparable from *Hirundo* and Brooke (*in litt.*) later concurred and agreed with Mayr & Bond (1943) that *H. fuliginosa* should be placed in *Petrochelidon*. However, Hall & Moreau (1970) did not regard *H. fuliginosa* as a 'cliff swallow' neither could they find evidence that it was closely related to any other African swallow species. I agree with Hall & Moreau (1970) and will argue the case below in more detail.

I regard the cliff swallow group as monophyletic (see below), but not distant enough from *Hirundo* to warrant a separate genus and I thus agree with Phillips (1973) that cliff swallows should be grouped in *Hirundo*. The characters of the cliff swallow species and *H. fuliginosa* are given in Table 3.

TABLE 3

Variable characters of 'cliff swallows'

Species	Colonial mud nests	Lay spotted eggs	Scaly mantle	Rump colorous with back	Red in plumage
Hirundo ariel	Yes	Some	Yes	No	Yes
H. nigricans	No	Yes	Yes	No	Yes
H. fluvicola	Yes	Yes	Yes	No	Yes
H. spilodera	Yes	Yes	Yes	No	Yes
H. rufigula	Yes	Yes	Yes	No	Yes
H. preussi	Yes	Yes	Yes	No	Yes
H. pyrrhonota	Yes	Yes	Yes	No	Yes
H. fulva	Yes	Yes	Yes	No	Yes
H. andecola	Yes?	?	No	in adults	in juveniles
H. fuliginosa	No	Some?	No	Yes	No
H. perdita	?	?	Yes	No	Yes

Cliff swallows are a group of 11 species (including the recently described *perdita* (Fry & Smith 1985) usually placed in *Petrochelidon*, and the binding factor amongst them is their highly colonial nesting habits, all of them, that is, except *H. fuliginosa* and *H. nigricans* of Australia. The Australian species has probably opted for a different breeding strategy as it has to compete with the closely related *H. ariel* for available nesting sites; but it does, however, still show all the other 'cliff swallow' features (Table 3). A second feature peculiar to the cliff swallows is the pale edges to the iridescent feathers of the mantle creating a scaly effect, a feature that is not found elsewhere in the Hirundinidae. All cliff swallows, again with the exception of *H. fuliginosa* and also of *H. andecola* show this scaly mantle. However, *H. andecola* may be a *Riparia* or close to it, since, though it is a colonial nester, apparently it does not use mud for nest building (Zimmer 1955, Johnson 1967). All cliff swallows lay speckled eggs as shown by good collections of eggs of most of the species in the BMNH. Some individuals of *H. fluvicola* also lay white eggs, but the majority of their eggs are spotted. The white eggs of *H. fuliginosa* are thus unlike most cliff swallow species. From Table 3 it is clear that *H. fuliginosa* falls short on probably all of the 5 characters listed.

From the above it would seem that *H. fuliginosa* is probably not a 'cliff swallow' and that its affinities in the Hirundinidae are not clear. It is probably not closely related to any other *Hirundo* species, though further data on its breeding and behaviour will presumably shed more light on its position.

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Notes on the seabirds of Wallis and Futuna Islands, southwest Pacific Ocean

by J.-C. Thibault & I. Guyot

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The French overseas territories of Wallis and Futuna Islands are located to the northeast of the Fijian islands, at 176°–178°W, and c. 14°S. Biogeographically they belong to the Samoa-Wallis province as defined by the South Pacific Commission (Dahl 1980). Wallis consists of a principal island, Uvea or Uea, which is surrounded by a lagoon with 20 islets of coral or volcanic rock, and Futuna and Alofi (Horne Islands) are situated c. 200 km to the southwest of Wallis. Alofi is less than 2 km from Futuna.

These 3 islands are located near the centre of a vast 1000 km-sided triangle of ocean delimited by the archipelagos of Tuvalu to the north, Samoa to the east and Fiji to the southwest. Because of their isolation they are of special significance as breeding stations for seabirds.

Uvea (96 km^2) is a volcanic island with little relief (maximum elevation 145 m); it offers few possibilities for nesting seabirds, except on the crags

which surround the crater lake of Lalolalo. In addition, the islets of the lagoon have nesting seabirds, with large colonies on 3 of them.

Futuna (80 km²) is also of volcanic origin, but much more ancient than Wallis; it reaches a maximum elevation of 480 m, and nesting seabirds occur principally in valleys of the interior.

Alofi (c. 35 km²) is a volcanic island of the same type as Futuna. It is completely forested, with a summit at 400 m. Colonies of breeding seabirds are present at the southwestern point, where they nest on trees and cliffs. Futuna and Alofi lack both lagoons and islets, having only a small coral platform; consequently, their coasts are exposed directly to the ocean waves.

Previous accounts of the seabirds of these islands are limited to notes by Finsch & Hartlaub (1867) on one species collected on Wallis by Gräffe in 1862; and notes on 4 species by J. G. Correia (MS.) in the journal of his visit during the Whitney South Sea Expedition in 1925. Correia mainly collected land birds during his brief visit; his journal records that he visited only 5 islets, all of them inhabited and of no special interest for seabirds.

During a stay on Futuna that began in 1842, a missionary, Père Servant, recorded the local names of seabirds nesting on Futuna and Alofi (see Rensch 1985). Two dictionaries, for the languages of Futuna (Grézel 1878) and of Wallis (Bataillon 1932), also give names of seabirds.

Our own studies were carried out during a visit to the 3 islands from 3 December 1985 to 30 January 1986 (21 days on Wallis, 35 days on Futuna and Alofi). On Wallis we explored much of Uvea, notably around all the volcanic lakes and on 9 of the islets in the lagoon (not visited by Correia) that appeared the best for breeding seabirds. On Futuna we visited all the coasts and most of the valleys of the interior, and on Alofi we were able to make detailed searches of coasts and the interior.

In view of the paucity of published data on seabirds in this part of the southwest Pacific we are summarising our observations in this paper. A fuller account of all the birds of Wallis and Futuna will appear later. In the systematic list below we give the best known local names for each species (W= on Wallis; F= on Futuna and Alofi).

SPECIES ACCOUNTS

RED-TAILED TROPICBIRD *Phaethon rubricauda* (W=Tavake)

Breeds occasionally on Wallis in small numbers. *Wallis.* A single sighting; one adult above an islet of the lagoon, 13 Dec. We were told that a pair nested recently in 2 successive years on another of the islets (G. Pambrun).

WHITE-TAILED TROPICBIRD *Phaethon lepturus* (W, F=Tavake)

Breeds regularly on all 3 islands in small numbers. *Wallis.* Aerial display seen near crater lakes on Uvea; possibly also nests on northern islets. *Futuna.* Several individuals displaying along the sea cliffs, above the trees in valleys inland and at the southeastern point of the island. *Alofi.* Seen singly and in twos or threes, displaying above forests of the interior and along the cliffs of the south coast. Reported by Correia at Wallis and Futuna. According to Servant, local people considered that it nests on Futuna.

RED-FOOTED BOOBY *Sula sula* (W, F=Gutulei)

Breeds abundantly on 2 of the 3 islands. We saw similar numbers of light-phased and dark-phased birds. *Wallis.* Colonies established in trees on 3 islets in the northern part of the lagoon and perhaps nesting on a fourth islet in the south. Incubation Dec and Jan; nestlings also present Jan. *Alofi.* Present only in the coastal forest of the southwestern point of the island, where there were both breeding and non-breeding birds (several thousands of individuals in roosts). Known to local people as a nesting bird on both islands.

BROWN BOOBY *Sula leucogaster* (W, F=Gutulei)

An uncommon breeding bird on 2 islands. *Wallis.* Several dozen pairs nesting on an islet in the north of the lagoon (building, Dec and Jan, incubation Jan). *Alofi.* 5 birds sitting on nests on a herb-covered ledge of a small sea-cliff on the southwest coast on 22 Jan. Several immatures seen in flight near the colony the same day.

GREATER FRIGATEBIRD *Fregata minor* (W, F=Katafa)

Undoubtedly regular as a visitor, but in small numbers. Frigatebirds of uncertain species were seen flying above all 3 islands, of which 2 were definitely *minor*; at least one bird (male) was seen 13 Dec above an islet in the lagoon of *Wallis,* and 2 (one male, one immature) on 29 Dec at *Alofi.*

LESSER FRIGATEBIRD *Fregata ariel* (W, F=Katafa)

Perhaps nests at Wallis and Alofi. Seen regularly and reliably identified at all 3 islands. *Wallis.* Commoner than elsewhere, with up to 50 above islets in the lagoon, Dec. No nesting or display seen except for a male with inflated throat pouch perching in a tree beside a female, close to nests of *Sula sula* (Jan). *Alofi.* Not common, but visits the coasts. The only indication of possible nesting activity was a male with inflated throat pouch seen 29 Dec not far from the colony of *Sula sula. Futuna.* Regular visitor along the coasts.

BLACK-NAPED TERN *Sterna sumatrana* (W=Talagogo)

Nests in small numbers at Wallis; a visitor to Alofi. *Wallis.* Seen regularly in the lagoon; also fishing occasionally in an inland lake (Kikila). Nests on an islet in the north of the lagoon: on 13 Dec adults seen displaying and laying had begun; on 25 Jan c. 15 pairs nesting. Breeding seems certainly regular – a colony of c. 20 birds (with eggs and chicks) was photographed on the same islet in 1983 (M. Ruotolo). *Alofi.* 2-3 non-breeding birds were seen Dec and Jan. Not previously reported nesting in the "Samoa-Wallis province", although it nests on Tonga and Fiji (Garnett 1984).

BRIDLED TERN *Sterna anaethetus* (W=Talagogo?)

Seen only at *Wallis,* where it breeds. 2 colonies of 4-5 pairs each were found on separate islets in the north of the lagoon (8 and 13 Dec, 25 Jan). On each visit the birds were in pairs and alarmed by our presence. When we left they appeared to be very attached to their site, returning immediately, to land in inaccessible places, where some birds appeared from their stance to be incubating (Dec). Seen once crossing the lagoon to the south of Uvea (2 birds, 27 Jan). Because of difficulties in identifying species in this group of terns, *Sterna fuscata-lunata-anaethetus* (see

Harrison 1983, Watling 1982), we wish to emphasise that our identification is based on prolonged observations and supported by field sketches. In this part of the Pacific, *S. anaethetus* had previously been reliably reported only on Fiji and it was of uncertain status in the "Samoa-Wallis province" (Garnett 1984).

SWIFT TERN *Sterna bergii*

Visitor. A single sighting of an immature in the lagoon at Wallis, 28 Jan.

BROWN NODDY *Anous stolidus* (W, F=Gogo)

Nests on all 3 islands. *Wallis.* Nests on the crags around the crater lake of Lalolalo on Uvea (sitting birds and nestlings, Dec); also nests in larger numbers on 4 islets (sitting birds and nestlings, Dec and Jan) on cliffs and in trees. Probably also nests on several other large islets in the lagoon. *Futuna.* The commonest tern. Large flocks seen offshore daily. Nests in trees, locally near the coast and in large numbers from the upper parts of the valleys down to 200 m elevation. *Alofi.* Uncommon and very local. Definitely nests in one locality (coastal cliff) and probably in 2 other coastal sites (in trees). Reported from Wallis and Futuna by Correia. Known as a breeding bird to the inhabitants of all 3 islands.

BLACK NODDY *Anous tenuirostris* (W=Gogo)

Seen only at *Wallis,* where it nests abundantly. Noted daily fishing near reefs in the lagoon, where it was more abundant than *A. stolidus* and *Gygis alba.* Did not appear to be nesting on Uvea, although groups of 10-50 birds were frequently found resting in coastal vegetation. Breeding was confirmed on 4 islets and suspected on at least one other. Nest-building and sitting birds were seen, Dec, and fledged juveniles, Jan. This species was collected at Wallis by Gräffe in 1862 (Finsch & Hartlaub 1867) and seen there by Correia, April 1925.

WHITE TERN *Gygis alba* (W=Tala; F=Aki Aki)

Nests on all 3 islands. *Wallis.* Seen in twos and threes in many places near the coast and inland, but we saw no real evidence of nesting. However, breeding was confirmed on 3 islets and suspected at another (sitting birds Dec and Jan; nestlings Dec and Jan; fledged juveniles Jan). *Futuna.* Seen regularly at sea. Nests near the coast, but more abundantly in the valleys inland and up to the highest elevations. *Alofi.* Surprisingly scarce at this wooded island, where suitable nest sites appear to be plentiful. We saw displays at the edges of forests and plantations but did not obtain proof of nesting. This species was collected by Correia (MS.) at Wallis and seen by him at Futuna. According to local tradition, it has been known for many years to breed at Wallis and Futuna.

Discussion

The breeding seabird populations known from these 3 islands are not of great importance. Nonetheless, their diversity at Wallis merits attention, especially as there are 2 species that are uncommon in the region (*Sterna sumatrana, S. anaethetus*).

Although our observations are likely to have revealed all the breeding species of Pelecaniformes and Sternidae, it is likely that Procellariiformes escaped our attention. The dictionaries by Grézel (1878) and Bataillon

(1932) mentioned the vernacular name "Kuka". Local people on Wallis and Futuna told us that this bird is nocturnal, of a generally brown colour, very rarely seen and that when it flies over a house calling it is regarded as an omen. Very similar reports given to one of us (JCT) in the Society and Marquesas Islands are referable to *Puffinus* spp. According to descriptions from G. Pambrun (of Wallis) it appears that Kuka has the behaviour and nocturnal habits of a *Puffinus* sp. and that it nests in cavities on one or two of the islets at Wallis. Our searches with J. Pambrun revealed nothing. Similarly, on Futuna, where local inhabitants knew the name, they did not know where to find the birds. This vernacular name has not been reported in other Polynesian languages (Holyoak & Thibault 1984, Watling 1982).

Another petrel, *Pterodroma leucoptera,* might nest in the mountains of Futuna, but our searches were fruitless. This species has been found at Gau, Fiji (Watling & Lewanavanua 1985) in a type of habitat that exists on Futuna.

Table 1 summarises the numerical status of the breeding seabirds. Most species are present only in small numbers, although some of those that feed at sea, especially *Sula sula,* are more plentiful. It is also noteworthy that *Sterna fuscata* is absent from the 3 islands. Several factors may explain this situation, but especially disturbance by man. On the inhabited islands of Uvea and Futuna (with 8084 and 4324 inhabitants respectively in 1983) the coasts are inhabited and cultivated and seabirds nest only in the least disturbed regions. The very small islets in the north of the lagoon at Wallis have interesting seabird colonies but they are not subject to any conservation measures. On these islets the occasional disturbance from fishermen, cultivators and walkers limit the possibilities for breeding seabirds. Furthermore, the development of excursions to visit "les îles aux oiseaux"

TABLE 1

SPECIES	WALLIS	FUTUNA	ALOFI	"SAMOA-WALLIS" PROVINCE
Puffinus pacificus	–	–	–	?B
Puffinus lherminieri	–	–	–	?B
Phaethon rubricauda	B1	–	–	?B
Phaethon lepturus	B2	B2	B1	B
Sula sula	B3	–	B3	B
Sula leucogaster	B1	–	B1	B
Fregata ariel	?	–	?	–
Sterna fuscata	–	–	–	B
Sterna anaethetus	B1	–	–	?
Sterna lunata	–	–	–	?
Sterna sumatrana	B2	–	–	–
Procelsterna cerulea	–	–	–	?B
Anous stolidus	B3	B3	B2	B4+
Anous tenuirostris	B4	–	–	B
Gygis alba	B3	B4	?	B4+

Table 1. Comparison of the status of breeding seabirds on Wallis, Futuna and Alofi, Dec 1985-Jan 1986, and in the "Samoa-Wallis province" (after Garnett 1984).

B=breeds. B1=breeds, population estimated at 1-9 pairs. B2=breeds, 10-99 pairs. B3=breeds, 100-999 pairs. B4=breeds, 1000-9999 pairs. ?=may breed, status uncertain. –=not recorded breeding. ?B=breeding suspected, but not recently proved.

constitutes a serious threat to the colonies. Species nesting on the ground (*Sterna* spp., *Phaethon rubricauda*) are particularly at risk because of human disturbance and the presence of rats, dogs and pigs on most of the islets. At Wallis we noted that *Sula sula* was trapped for food, and at Futuna the capture of *Anous stolidus, Gygis alba* and *Phaethon lepturus* is not rare. However, it is impossible to evaluate the importance of such predation.

The absence of *Anous tenuirostris* at Futuna and Alofi may be related to the absence there of lagoons, because at Wallis this species feeds mainly in the lagoon. The small numbers of medium-sized seabirds (*G. alba, A. stolidus, P. lepturus*) at Alofi and in the eastern part of Futuna are surprising (see Table 1). On these islands there are vast wooded zones that are either isolated or little disturbed and which appear suitable for nesting seabirds. It is possible that the limiting factor here is the presence of an arboreal snake, the Fiji Python (*Candoia bibronii*), which might be a predator of eggs and nestlings.

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The gender of the barbet genus *Tricholaema* Verreaux & Verreaux

by Lester L. Short & Jennifer F. M. Horne

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While preparing the Capitonidae section for *The Birds of Africa* (Vol 3), we came upon a nomenclatural problem involving use of the generic name *Tricholaema* Verreaux & Verreaux 1855. Those authors treated *Tricholaema* as feminine, clearly showing they intended it to be regarded as such in designating *Tricholaema flavipunctata* (now *T. hirsuta punctata*) as the type species of the genus. There was almost universal treatment of *Tricholaema* as feminine in the past century, and this century until the 1920's and 1930's. More recently, however, it has been treated as masculine (e.g., *T. leucomelas*) or neuter (e.g. *T. leucomelan, T. hirsutum*).

Tricholaema has as its roots the Greek "thrix" or "trichos", meaning hair, feminine, and "laemos", meaning throat, masculine. In rendering *Tricholaema* instead of *Tricholaemos,* Verreaux & Verreaux latinized the suffix from the Greek, and made it feminine. The International Code of Zoological Nomenclature (1985: 30), Article 30 (a) (iii) clearly states that "A genus-group name that is or ends in a latinized Greek word takes the gender normally appropriate to the Latin termination". Thus, *Tricholaema* is feminine and, as its authors intended, should be so treated.

The species of *Tricholaema* are: *T. hirsuta, T. leucomelaina, T. frontata, T. diademata, T. lachrymosa* and *T. melanocephala*. Wolters (1976) used the latinized "*leucomelaena*" for *T. leucomelaina;* we prefer the Greek usage in the species-group name, for the ending of *Tricholaema* is Greek (though latinized). The usage urged here begs the question of the generic separation of *Tricholaema* from *Lybius*. We (Short & Horne 1985: 264–266) clearly showed that *Tricholaema* merits generic separation from *Lybius* on the basis of at least 6 characters or character complexes.

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Notes on a Greater Honeyguide *Indicator indicator* chick raised by Anteating Chats *Myrmecocichla formicivora*

by R. A. Earlé & J. J. Herholdt

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Recently Short & Horne (1985) updated our knowledge of the biology of Afrotropical honeyguides which was last treated by Friedmann (1955). From these 2 works as well as those by Ranger (1955) and Skead (1951) the Greater Honeyguide *Indicator indicator* seems to be one of the best known honeyguides. Although Plowes (1948) reported on some aspects of the chick development, no detailed study has been done on the growth and development of the nestling Greater Honeyguide, possibly because of the difficulty of reaching such nestlings, as they are usually raised by hole breeding species such as starlings, kingfishers, hoopoes and the like (Short & Horne 1985).

While studying the Anteating Chat *Myrmecocichla formicivora* at Bloemfontein, South Africa (29°06'S, 26°13'E), one of the nests under observation was parasitized by a Greater Honeyguide and this afforded the opportunity to study this species in the nest. The chat nests were checked, usually daily, with a mirror and lightbulb at the end of a 1.5 m long thin tube. As the chats often desert when disturbed at the nest during early incubation, we only excavated an access to nests after the chicks hatched. Not knowing that one of the 5 eggs in a particular nest was that of a honeyguide, the nest was excavated when the honeyguide chick was 3 days old. This was done by digging a trench behind the nesting chamber and then digging towards the nesting chamber by hand until the wall between the trench and chamber was broken. The hole in this wall was then plugged by a round stone which fitted tightly into the hole. The chat's nest-hole was in the sidewall of a trench next to a ploughed field and no trees occurred within 1 km radius of the nesting site. The hole was 64 mm above the floor of the 1.5 m deep trench, 700 mm long (including the nesting chamber) and faced in a northeasterly direction.

On 30 September 1985 the Greater Honeyguide chick hatched together with one Anteating Chat chick. When the nest was inspected by mirror on 1 October only the honeyguide was present together with 2 unhatched eggs. On 2 October, when access to the nesting chamber had been excavated, the chick was measured and the eggs taken. Both eggs were punctured and one broke when handled. The honeyguide chick was measured till it was 32 days old when it died in the nest after four days of continuous heavy rain. Body mass was measured with a 50 g capacity Pesola spring balance to the nearest 0.1 g. Other measurements were done in a standard way with a stopped wing-rule or vernier calipers to the nearest 0.1 m.

Growth and development

When newly hatched, the chick is blind and devoid of any trace of feathers with a translucent flesh-coloured skin (Friedmann 1955). When

the chick was measured for the first time at the age of 3 days, the lateral pterilae were just visible as greyish dots below the skin. The wart on the tarso-metatarsal joint was very prominent and the hooks on the tips of the mandibles yellowish and nearly transparent. The bill could not be closed completely because of these hooks. The tail pins broke the skin on day 11

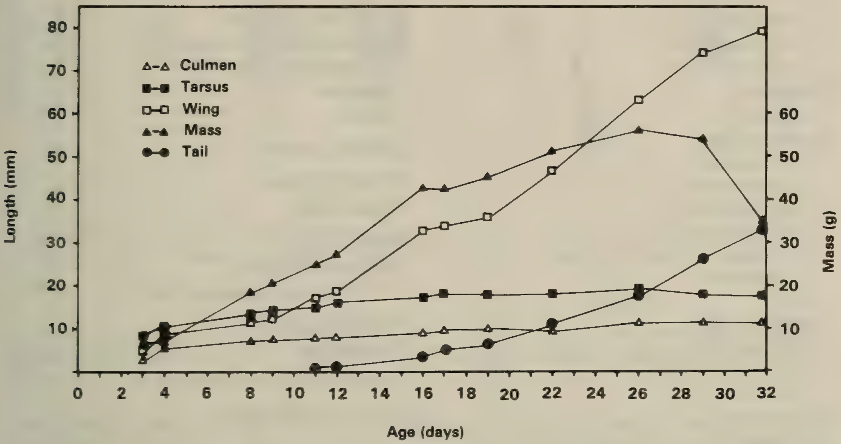

Figure 1. The growth of an *Indicator indicator* nestling raised by *Myrmecocichla formicivora*. The chick died when 32 days old and was not ready to leave the nest at that stage.

and both the tarsus and culmen reached full length on about day 17 (Fig. 1). The eyes opened on day 14 and the egg tooth was visible until day 18. Both Friedmann (1955) and Ranger (1955) stated that the mandible hooks were lost on about day 14, but in this nestling the lower hook dropped off at day 22 and the upper hook was still present at day 32 when the chick died. This agrees more with Haagner (1911) who describes hooks on a young Greater Honeyguide "fully fledged and ready to fly". When last observed alive, at day 32, the chick was not capable of flight and most of the underwing coverts were still in pin. The chick was thus not ready to leave the nest at 32 days and a nestling period in this case of c. 40 days is suggested, which is much longer than the 30 days mentioned by Short & Horne (1985). It is unlikely that the slow development of the honeyguide chick was caused by the heavy rain as Anteating Chat chicks raised in the same area at this time were not retarded in their development.

Maclean (1985) states that it has not been proven that the young Greater Honeyguide kills host young. To test this a 6-day old House Sparrow *Passer domesticus* was placed in the nest and left for only about 1 hour. On opening the nest the House Sparrow chick was found to have numerous puncture marks on its back and was very weak. It was removed from the nest and later died. It can thus be accepted that the Greater Honeyguide chick would kill the young of its host as was shown to be the case with the Lesser Honeyguide *I. minor* (Friedmann 1955).

TABLE 1

Diet of *Indicator indicator* chick raised by *Myrmecocichla formicivora*

Taxon	Number of times occurring	Taxon	Number of times occurring
COLEOPTERA			
Carabidae		HYMENOPTERA	
Thermophilum	6	**Formicidae** (several spp.)	30
Harpalinae	1	*Anoplolepis custodiens*	6
Meloidae		**Vespidae**	1
Mylabris	1	**Apidae**	1
Scarabaeidae		DERMOPTERA	2
Scarabaeinae			
Scarabaeus sp.? 1	10	HEMIPTERA	
Scarabaeus sp.? 2	1	**Reduviidae**	3
Onthophagus	1	ISOPTERA	
Cetoniinae		**Hodotermitidae**	
Scaptobius	2		
Sp.?	7	*Hodotermes mozambicus*	16
Tenebrionidae		SOLPHUGIDA	
Zophosis boei	8	**Daesiidae**	4
Zophosis sp.? 1	10	HELMINTHOMORPHA	1
Zophosis sp.? 2	1		
Elateridae	7	ONISCOMORPHA	1
Carabidae larva	1		

Diet

The nestling honeyguide receives the same sort of food that its foster parents would give their own young (Friedmann 1955). Table 1 gives an indication of the diet of the nestling honeyguide as revealed by identifying undigested prey remains from pellets cast by the nestling honeyguide. The species present in the honeyguide diet agrees with the observed variety of prey in the Anteating Chat diet (Earlé & Louw in prep.). The presence of Carabidae beetles of the genus *Thermophilum* is interesting in that these beetles are up to 6 cm long and are generally believed to be unpalatable, since they eject a strong smelling fluid when handled.

Begging call

Skead (1951) first described the begging call of the nestling Greater Honeyguide as "husky and perpetual". Fry (1974) considered the begging call to be "extremely similar" to the voice of nestlings of Red-throated Bee-eaters *Merops bulocki*, the foster parents of the Greater Honeyguide he studied, but found that it resembled 2 (or more) bee-eater nestlings calling simultaneously. This call of the honeyguide probably evoked a stronger feeding response in adult bee-eaters than the call of a single bee-eater nestling (Fry 1974). Jubb (1966) also commented that a young Greater Honeyguide recently out of the nest of a Red-billed Wood-hoopoe *Phoeniculus purpureus* made the same begging noises as a female wood-hoopoe. Vocal convergence between parasite and host nestlings has also been suggested for some cuckoos (Courtney 1967) and is probably not unexpected. In contrast, the sonagrams of Greater Honeyguide and

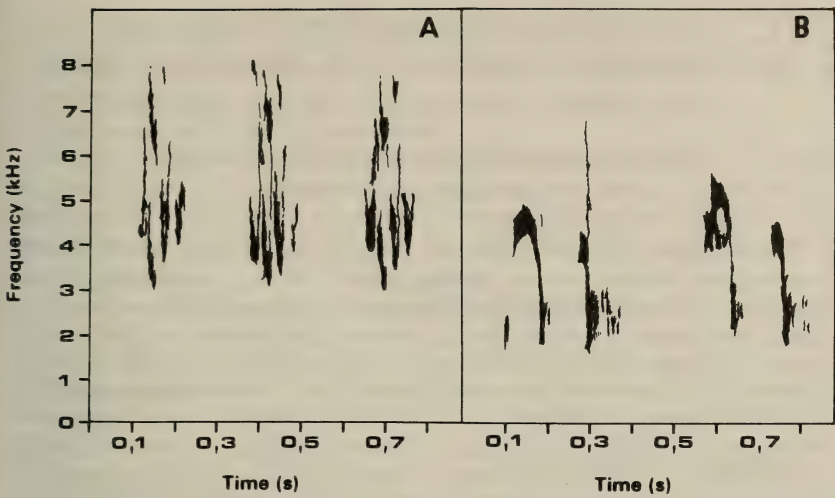

Figure 2. Sonagrams of the begging call of a 15 day old *Indicator indicator* chick raised by *Myrmecocichla formicivora* (A). Begging call of a *Myrmecocichla formicivora* chick 16 days old (B).

Anteating Chat chicks show no resemblance in either frequency or structure (Fig. 2). This probably indicates that because the Greater Honeyguide parasitizes such a wide variety of bird species (Short & Horne 1985) there is not always vocal convergence and that being the sole occupant of a nest probably already ensures an adequate food supply for the chick.

Acknowledgements: We are indebted to Dr S. Louw for identifying the diet remains and to Mr T. Harris for producing the sonagrams.

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European and African Reed Warblers, *Acrocephalus scirpaceus* and *A. baeticatus:* vocal and other evidence for a single species

by F. Dowsett-Lemaire and R. J. Dowsett

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It has long been known that the song of the African Reed Warbler *Acrocephalus baeticatus* – a grating, nasal chatter – is indistinguishable from that of the European Reed Warbler *A. scirpaceus*. The reports have come from many parts of Africa, covering populations of the 2 major forms *baeticatus* and *cinnamomeus* (*e.g.* Alexander 1899-1900, Lynes *in* Chapin 1953, Benson *in* Benson & Pitman 1956, Dowsett & Lemaire 1976, Schüz & Becker *in* Becker 1977). This vocal similarity has at times led to confusion, as when in 1971 J. Fairon thought he was collecting *A. scirpaceus* in Niger, whereas in fact the singing birds belonged to *baeticatus* (Devillers & Dowsett-Lemaire 1978). Similar examples of confusion come from Chad (Dowsett-Lemaire & Dowsett in press).

In our experience in south-central Africa, the only reliable field characters that can be used to separate African from European Reed Warblers are the smaller size and shorter, rounder wing of the African form. They overlap in general colouration (and both present a contrast between the more brightly-coloured ginger or rufous rump and the duller upperparts), and are very much alike in silhouette (especially the tapering profile of the head and long thin bill).

The present paper is part of a long-term study of the genus *Acrocephalus* (e.g. Lemaire 1977, Dowsett-Lemaire 1979a, 1981a). We first review the rather complex taxonomic reshuffles that *A. baeticatus* has been through since Hall & Moreau (1970) allied it to *A. scirpaceus.* We then present descriptive as well as experimental evidence of the similarity in vocalizations, a summary of habitats used in Africa, and suggestions of areas of research into the possible interactions of *baeticatus* and *scirpaceus*.

Material and methods

All tape recordings were made using an Uher 4000-L machine at a speed of 19 cm/sec, and a semi-directional microphone (Beyer M69) at the centre of a parabolic reflector of 75 cm diameter. Tapes were analysed with a Kay Electric Co. Sonograph (model 7029A). In playback experiments, tapes were played on the edge of occupied territories, either through a loudspeaker – connected by a cable to the recorder 15 m distant – or directly from the recorder. Experiments combining 2 song types presented 1 min of either song, followed by an interval of at least 5 min, then 1 min of the other song; in the case of *A. dumetorum* where the song is discontinuous, the tape was played for 2 min.

Taxonomic and geographical background

A. scirpaceus

Vaurie (1959) and others have recognized 2 races of *A. scirpaceus:*

A.s. scirpaceus (Hermann 1804) and *A.s. fuscus* (Hemprich & Ehrenberg 1833). Both winter entirely within the Afrotropical region, and their distribution and ecology there are detailed by Dowsett-Lemaire & Dowsett (in press).

A. baeticatus and *A.(b.) cinnamomeus*

White (1960) recognized 4 races of *A. baeticatus (sensu lato)*, considering *suahelicus* to be a synonym of nominate *baeticatus*. Subsequently 3 more races have been described, and the type localities and authors of all 8 are given in Table 1. It should be noted that the type locality of

TABLE 1

The subspecies of *Acrocephalus baeticatus (sensu lato)*

Subspecies	Author	Type locality
baeticatus-group		
baeticatus	(Vieillot 1817)	South Africa (Knysna, S. Cape)
suahelicus	Grote 1926	Tanzania (Zanzibar Is.)
hallae	White 1960	Namibia/S.W. Africa (Brandberg)
cinnamomeus-group		
cinnamomeus	Reichenow 1908	Zaire-Uganda (N. end of L. Edward)
nyong	Bannerman 1936	Cameroon (Akonolinga, Nyong R.)
hopsoni	Fry, Williamson & Ferguson-Lees 1974	Nigeria (Malamfatori, L. Chad)
fraterculus	Clancey 1975	Moçambique (Bela Vista, Maputo)
guiersi	Colston & Morel 1984	Senegal (L. Guier, Richard-Toll)

cinnamomeus has been quoted variously as Lake Edward or Lake Albert (*e.g.* Chapin 1953: 457, White 1960); its original citation is Lake Albert Edward, which as Chapin (1954: 640) pointed out is synonymous with Lake Edward.

The recognition of 2 species within *A. baeticatus (s.l.)*, following Clancey (1975), would mean allocation of the first 3 races in Table 1 to *A. baeticatus*, and the second 5 to *A. cinnamomeus*. As presently known, the distribution of the former group is mostly continuous, whereas *cinnamomeus* appears to be present as a series of isolates (Clancey 1975). Some populations, at least of *A. baeticatus (sensu stricto)*, appear to be migratory, while breeding birds of both it and *cinnamomeus* occur alongside migrant *A. scirpaceus* for part of the year.

Clancey's (1975) separation of *A. baeticatus* into 2 species is based on 2 conclusions: (1) that southern Zambian birds are the same race, *A.b. suahelicus*, as found in mangroves of coastal eastern Africa, and (2) are separated by a second, smaller species *A. cinnamomeus*. The first conclusion seems rather unlikely on geographical grounds, and is besides based on very few specimens. The second conclusion appears to be based on the measurements of only 8 specimens from the intervening area, from 8 different localities; these are attributed to *A. cinnamomeus fraterculus*.

Clancey recognizes *A. cinnamomeus* as a species on differences of wing and tail length only, as he finds colouration of little use, and "examination of the wing-formulae of the two species reveals no trenchant difference" (Clancey 1975: 4). The breeding status of these specimens is not considered, nor are song and other characters.

TABLE 2

Two populations of *Acrocephalus baeticatus* measured in southern Zambia

Population	Dates	n	Wing[1] mean	Wing[1] range	Weight[2] mean	Weight[2] range
A	26 Nov – 1 Apr	10	57.5±1.97	55–61	10.1±1.56	7.9–12.8
B	14 Aug – 8 Sep	6	61.6±2.38	58–65	11.1±1.32	9.7–13.5

[1] Wing measurement maximum chord (mm), mean ±S.D.
[2] Weight (g), mean ±S.D.

In southern Zambia alone, 2 populations of *A. baeticatus* can be distinguished on the basis of size (Table 2), the longer-winged birds (B) being non-breeding winter visitors, the shorter-winged (A) the local summer breeders. Our sample is small, but the difference appears statistically significant ($d=3.48$, $P<0.01$). This suggests that the measurements of Clancey's samples should be interpreted with caution until more is known of the status of various populations and larger series are examined. The decrease in wing length northwards in southern Africa might be clinal (and related to migratory patterns); even if this is not the case, small differences in wing and tail length when all other characters are equal are likely to be of no more than subspecific importance.

A. baeticatus and *A. dumetorum*

Fry *et al.* (1974) have similarly used characters of wing morphology, this time wing formulae, to ally *A. baeticatus* with the Palaearctic Blyth's Reed Warbler *A. dumetorum*. This lumping is surprising, and contrary to some other characters mentioned briefly by the authors, to which can be added voice – widely recognized as being of overall importance in species-isolating mechanisms among siblings (many references, *e.g.* Thorpe 1961). In fact in general appearance, colour, breeding habitat and habits *A. dumetorum* is much more closely related to the European Marsh Warbler *A. palustris* (Eriksson 1969, Williamson 1974, Koskimies 1980), with which it has in fact been reported to hybridise – perhaps not infrequently, as Koskimies (1980) found 3 mixed pairs in one small area of Finland in 1979. The song of *dumetorum* is very distinctive and quite unrelated to that of reed warblers *s.l.:* as in *A. palustris*, it is richly imitative, but discontinuous, louder and more repetitive, consisting of separate melodious phrases delivered in a slow tempo (e.g. Boswall 1968, Palmér & Boswall 1972). Moreover, all populations of *dumetorum* winter in or near the Indian subcontinent (Vaurie 1959), those which breed in eastern Europe migrating southeastwards. Such a migration pattern would be most unexpected if the origins of *dumetorum* did indeed include a close relationship to any Afrotropical form.

Vocalizations

In European *Acrocephalus* warblers the song is highly species-specific, and is often the best field character used in distinguishing the closely similar and plain-plumaged members of the genus. For example, the song of *A. palustris* (a close relative of *A. scirpaceus*) is very different in many of its aspects, e.g. tempo, timbre and the nature of the motifs, which are

essentially extraspecific imitations (Dowsett-Lemaire 1979a, 1981b).

A. scirpaceus

The song of *A. scirpaceus* is a slow, distinctively nasal chatter, consisting of short, softly grating phrases, directly juxtaposed or sometimes linked by 1-2 fluid notes. It is delivered more or less continuously by unmated males, which may sing for several minutes without interruption, or even a few hours with occasional breaks of no more than a few seconds. A typical sequence may be rendered as "chirruc-chirruc-chirruc-puipuipui-trer-trer-trer-tjetje-tjetje", and the main frequency range is 1.5 – 6.5 kHz (see Fig. 1, also Heuwinkel 1978).

One of the most frequent types of phrase consists of nasal elements (with several harmonic overtones), grouped into twos and repeated 2-5 times; there are clear examples of this in Fig. 1A (phrase a) and 1D (phrase c). Grating notes, with a structure resembling that of the churring alarm calls, are also characteristic (see Fig. 1C, phrase b). Brief imitations of other species' calls are sometimes uttered, but are never more than occasional. Males continue to sing after pairing, but for a much smaller proportion of the time (Catchpole 1973). More or less subdued song is often heard in the winter quarters (Dowsett-Lemaire & Dowsett in press).

A. baeticatus (including the form *cinnamomeus*)

The spectrographic comparison of recorded songs of *A. scirpaceus* to *A. baeticatus* and *cinnamomeus* confirms the observations on song similarity made by earlier ornithologists. Tapes are now available from the breeding grounds of *cinnamomeus* in Senegal (recording by G. J. Morel, with one of the singers collected), and of *baeticatus* in Zambia (F. D.-L., published in part by Chappuis 1978), Zimbabwe (A. Walker *in* Chappuis 1978) and Natal, South Africa (F. D.-L., unpubl.). The identity of our Zambian and South African samples was confirmed by capture. From 1-2 minutes of full song of all 3 forms have been analysed spectrographically, and selected results are shown in Fig. 1.

This preliminary examination shows no significant differences in pitch, tempo, syntax or structure of notes in the songs of all 3 forms. The characteristic double, nasal elements of *scirpaceus* "chirruc-chirruc-chirruc" are also frequent in *cinnamomeus* (compare phrase d of Fig. 1E and e of 1G to the corresponding motifs in Fig. 1D (c) and 1A (a) respectively) and *baeticatus* (phrase g in Fig. 1I and h in Fig. 1J). The grated notes (b) of *scirpaceus* in Fig. 1C have their equivalents in the other forms, e.g. *baeticatus* in Fig. 1I (phrase f).

That such similarity is found in the repertoires of widely separated populations is striking. Study of the full repertoires of *scirpaceus* requires between 5 and 10 minutes of continuous song to be spectrographed (C. K. Catchpole, C. Keulen). Such time-consuming analysis could not be attempted here, but would be useful in revealing the extent of inter-individual and intra-population variation.

Chappuis (1978) suggested the existence of another song type in *baeticatus*, but this was in reference to a recording by Stannard & Niven (1966) subsequently shown to be a misidentification of the juvenile song of *A. palustris* (Dowsett-Lemaire 1981b). Chappuis's comment that

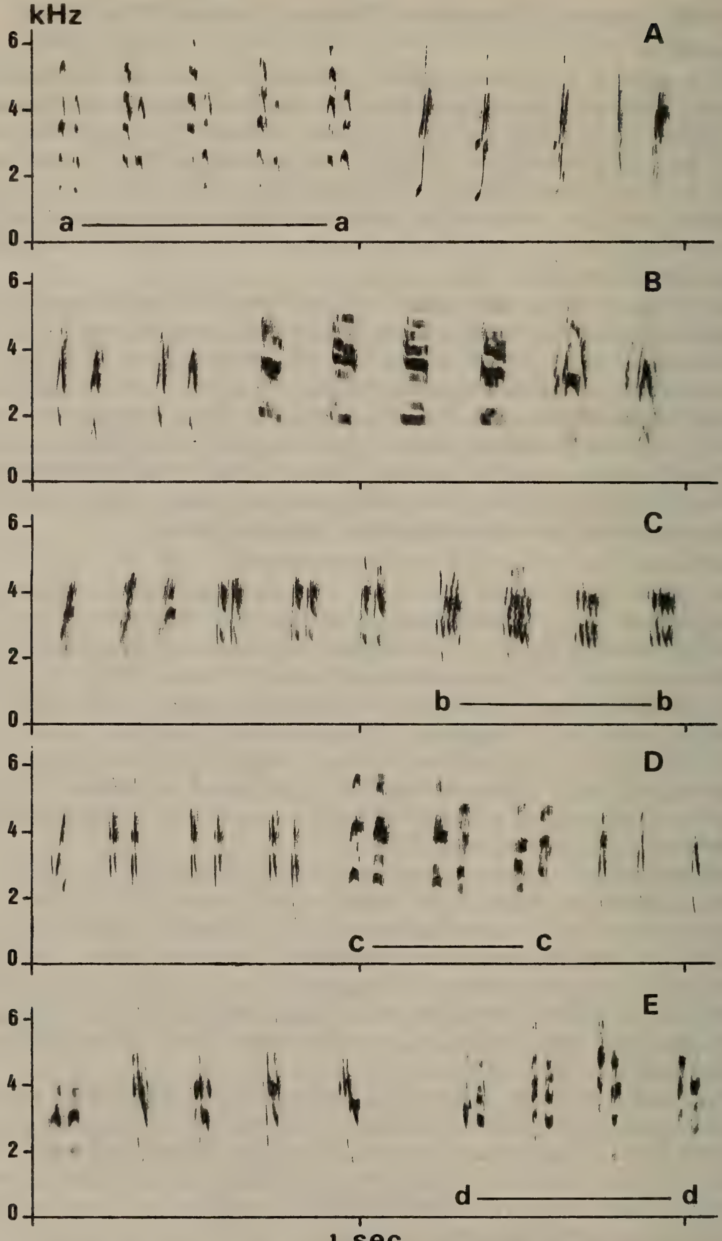
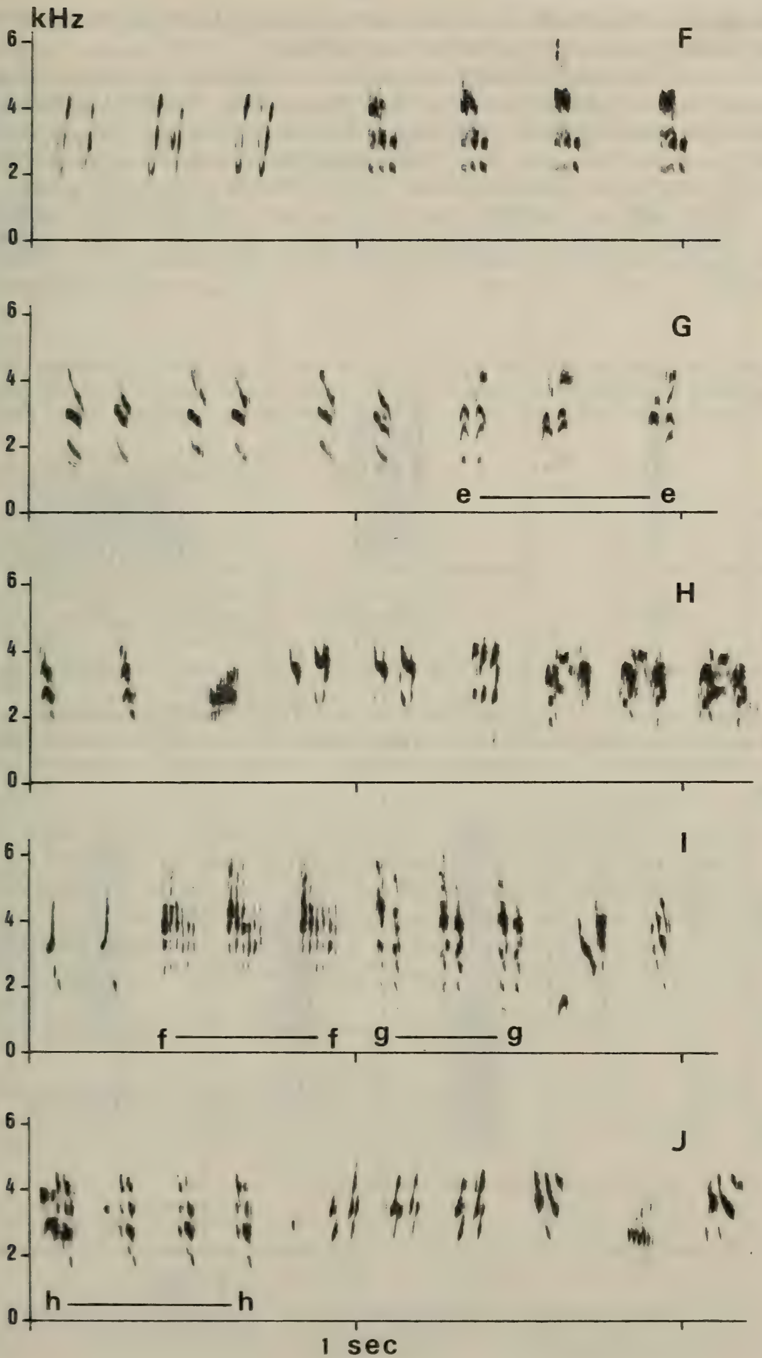


Figure 1. Sound spectrograms illustrating fragments of song of:– A–D. European Reed Warbler *Acrocephalus scirpaceus* (recorded in Belgium); E–G. African Reed Warbler *A. baeticatus*, form *cinnamomeus* (recorded in Senegal, by G. J. Morel); and H–J. form *baeticatus* (recorded in Zambia). Phrases discussed in the text are labelled a, b etc.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baeticatus song might be slightly lower-pitched than that of *scirpaceus* is not borne out by comparison of sonograms.

As in *scirpaceus, baeticatus* continues to sing after pairing, with a decrease in the frequency and length of song phrases. Subdued song has been heard in moulting birds wintering in Zambia (pers. obs.; P. B. Taylor); the song can become quite loud at the end of moult, and by September some males in southern Zambia reacted strongly to the playback of a tape.

When they are alarmed, the most frequent call-notes in *A. scirpaceus*, *A. baeticatus* and also *A. palustris* are sharp, clicking "tec, tec" noises and

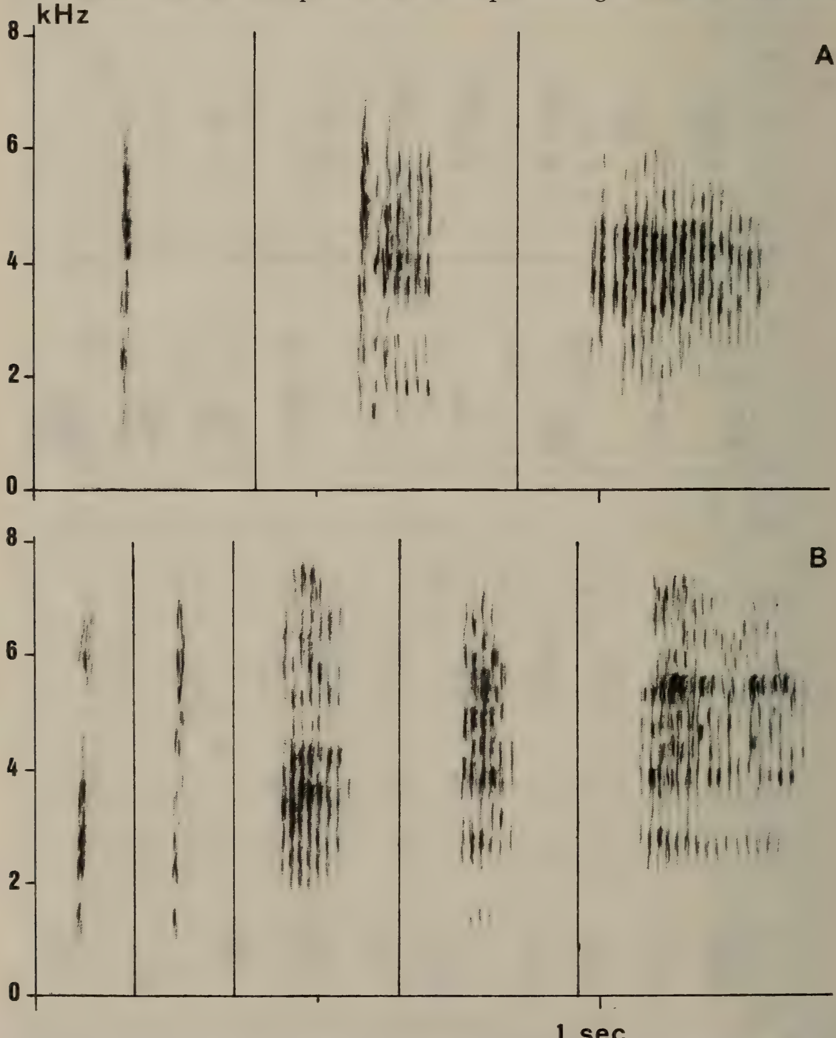

Figure 2. Sound spectrograms showing alarm calls of:– A. *Acrocephalus scirpaceus* (1 "tec" followed by 2 types of rattle, recorded in Belgium), B. *A. baeticatus* (2 "tec", then 2 types of rattle, recorded in Zambia).

"krrrt" rattles of varying length. As studied in detail in *A. palustris* (Dowsett-Lemaire 1979b), there is much individual variation in the length and structure of these calls, and from the material available for *scirpaceus* and *baeticatus* (Fig. 2) it is not possible to detect significant differences between them so far, though in some situations the calls of *baeticatus* have sounded less nasal than those of *scirpaceus*.

Playback experiments

Vocal similarities between *A. scirpaceus, baeticatus* and *cinnamomeus* are further evidenced by the results of tape playback experiments. In all, 40 reed warblers were tested with the playback of tapes of various origins (Table 3).

TABLE 3

Playback experiments (Nos 1–6) of the song of reed warblers (*Acrocephalus scirpaceus, baeticatus* and *cinnamomeus, sensu* Clancey 1975), European Marsh Warbler *A. palustris*, and Blyth's Reed Warbler *A. dumentorum*, presented to territorial male reed warblers in Europe and Africa.

No.	Bird tested	Place, date	Tape used	Origin
1.	*A. scirpaceus* (n=10)	Belgium, May 1976	*baeticatus* & *scirpaceus*	Zambia, Belgium
2.	*A. baeticatus* (n=5)	Zambia, March 1977	*scirpaceus* & *baeticatus*	Belgium, Zambia
3.	*A. scirpaceus* (n=5)	Belgium, May 1985	*cinnamomeus*	Senegal
4.	*A. baeticatus* (n=6)	South Africa, Nov 1985	*cinnamomeus* & *scirpaceus*	Senegal, Belgium
5.	*A. baeticatus* (n=6)	South Africa, Nov 1985	*cinnamomeus* & *palustris*	Senegal, Belgium
6.	*A. baeticatus* (n=8)	South Africa, Sept 1986	*scirpaceus* & *dumetorum*	Belgium, Finland

All tapes of *A. scirpaceus, baeticatus* and *cinnamomeus* provoked strongly positive reactions in territorial males (with movements towards the loudspeaker or recorder, searching behaviour and loud song). Mist-netting was occasionally undertaken in conjunction with tape playback: in Zambia a *scirpaceus* tape attracted 2 male *baeticatus* into a net, while in Belgium a tape of *cinnamomeus* from Senegal enabled 2 male *scirpaceus* to be caught.

The control tapes of *A. dumetorum* (Table 4) and *A. palustris* elicited no

TABLE 4

Time spent within 1 m of the speaker by 10 *A. scirpaceus* (Belgium, exp. 1) and 8 *A. baeticatus* (South Africa, exp. 6) submitted to playback songs of *A. baeticatus, scirpaceus* and *dumetorum* in their territories.

		Time (sec) spent near speaker by individuals									
Species tested	Tape used	1	2	3	4	5	6	7	8	9	10
A. scirpaceus	*A. baeticatus*	35	60	15	62	70	64	42	30	16	75
	A. scirpaceus	45	60	12	60	30	62	60	10	15	40
A. baeticatus	*A. scirpaceus*	80	35	90	55	43	60	42	15		
	A. dumetorum	0	0	0	0	0	0	0	0		

response (see also Lemaire 1977 for experiments with *A. palustris* and *A. scirpaceus*). With reed warbler tapes, there was much inter-individual variation in the length and type of response, depending for instance on whether or not the male tested was paired. In experiments combining *baeticatus/scirpaceus* or *cinnamomeus/scirpaceus* the same birds, however, approached the source of sound in much the same way on hearing either tape, but were often quicker to react during the second playback. In similar experiments with European *Acrocephalus* warblers, Catchpole & Leisler (1986) recommended the most useful measure of aggressive response as the time spent by a bird within 1 m of the speaker. This was measured in experiments 1 and 6 (where the tape was played through a speaker 10-15 m away from the observer), and results are shown in Table 4. Mean response times for the *baeticatus* tape were 46.9±13.8 sec and 39.4±13.3 sec for *scirpaceus:* the difference is not significant.

Habitats used by *A. baeticatus* and *scirpaceus*

In Senegal *A. baeticatus* is known to breed in reedbeds dominated by *Typha* (G. J. Morel). In southern Zambia we found nest-building and feeding birds in seasonal floodplains where *Cyperus* was dominant. Elsewhere in southern Africa *baeticatus* occupies quite a variety of wet or moist habitats: the edges of *Phragmites* reedbeds (leaving the extensive, more deeply-flooded reeds to the larger and stronger-legged Lesser Swamp Warbler *A. gracilirostris*); extensive beds of thin-stemmed *Cyperus* (5-7 mm in section) mixed with *Typha* and pockets of *Phragmites; Typha* and scrub (*Convolvulus* creepers, *Solanum mauritianum*) over mud; tufts of vertical-stemmed grass *Panicum maximum* on river banks; thin reeds and scrub (*Acacia karroo*, *Rumex*, *Salix*) also on riverbanks. *A. baeticatus* occasionally settles in slightly moist thickets far away from water (with, e.g., thin *Phragmites*, *Scirpus*, *Asparagus* thicket and *Rhus* scrub).

The 5 nests F. D.-L. has examined were attached to 4-6 vertical stems (with occasionally 1-2 oblique) of *Cyperus* (2), *Typha* (2) and *Panicum maximum* (1) in the fashion typical of reed warblers, and at a height of 0.6-1.5 m. The nests themselves of *baeticatus* are like those of *scirpaceus*, especially in being deep-cupped, and similar to a Senegal nest of *cinnamomeus* figured by Fry *et al.* (1974). *A. baeticatus* were seen to feed in dry herbaceous growth and low trees outside their defended territories, as well as in marshland.

In most parts of South Africa (such as the Cape), *A. baeticatus* is a summer breeding visitor: this means that some populations undergo movements to the north which are likely to be of at least 1000-2000 km. Birds wintering near Livingstone in southern Zambia (from July or earlier to September) fed in dry riverside thickets of *Acacia*, *Lantana*, *Rhus* etc. with some tall grass and small *Phragmites* beds at the edges. This was exactly where *A. scirpaceus* had been located in the summer rains. Similarly in northern Zambia at Ndola, P. B. Taylor observed and mist-netted non-breeding *baeticatus* in small deciduous and evergreen thickets with tall grass and *Typha* at the edge of a swamp, in the months of May and September to November. This was a regular site for wintering *scirpaceus*,

mostly from November to April, with the 2 thus overlapping in November.

Much of the breeding habitat of *baeticatus* in southern Africa dries out in the winter; those *baeticatus* wintering in Zambia do so in drier habitats, from which they are absent in the breeding season. The range of breeding and non-breeding habitats of *scirpaceus* – with a similar shift to drier situations after breeding – has been reviewed elsewhere (Dowsett-Lemaire & Dowsett in press; see also Leisler 1981). Clearly African and European Reed Warblers are very close in their ecological requirements and general habits.

Areas of further research

At this stage of our knowledge, 2 particular problems need further investigation. One is the analysis of full repertoires of African and European songs of Reed Warblers in order to establish inter-population variation (see above). The other should be examination of the behavioural and ecological interactions of *baeticatus* and *scirpaceus* in some areas of contact. South of the equator, close contact is likely to be limited, as wintering *scirpaceus* is generally found away from the marshland in which *baeticatus* breeds. Moreover, *scirpaceus* becomes very rare south of 15°S.

A. scirpaceus is widespread in winter in central and West Africa (Dowsett-Lemaire & Dowsett in press), but the status of *baeticatus* in much of that area needs clarification. The populations of *baeticatus* in the northern tropics are not as widely scattered as claimed by Colston & Morel (1984), who overlooked the facts that Lamarche (1981) reports them in Mali (under the name of *cinnamomeus*) as widespread and breeding south of 17°N, with large numbers in the inland Niger delta, and that Devillers & Dowsett-Lemaire (1978) describe specimens collected in Niger. Recently, Wilkinson & Aidley (1983) have discovered another population in northern Nigeria. *A. scirpaceus* winters north to about 16°N (map in Dowsett-Lemaire & Dowsett in press), and the northernmost localities of *baeticatus* are from the Tibesti in Chad, c. 21°21′N, 16°56′E (Fry *et al.* 1974) and Arrigui in Niger, 19°06′N, 12°55′E (Devillers & Dowsett-Lemaire 1978).

The Sahel Region could be the best general area in which to study interactions between *scirpaceus* and *baeticatus*. *A. scirpaceus* winters there during the dry season, and its typical non-breeding habitat of rank grass and leafy thickets is not widely available then. In Mali and northern Nigeria European Reed Warblers are reported from *Typha* beds and scrub on riverbanks, in cohabitation with African Reed Warblers (Lamarche 1981, Wilkinson & Aidley 1983). In Senegal also, some European birds occur with *baeticatus* in wet *Typha* beds (G. J. Morel). In Senegal and Gambia, African Reed Warblers breed in the summer rains in June (G. J. Morel) and July (Cawkell & Moreau 1963). One can expect *baeticatus* to be strongly territorial and vocal by at least the month of May (when indeed G. J. Morel tape recorded full songs), at a time when *scirpaceus* migrants are common. Moreover, some *scirpaceus* are present during June in Senegal, with 5 caught as late as 25-30 June (G. J. & M.-Y. Morel). The possibility of *baeticatus-scirpaceus* interbreeding cannot be excluded. So far,

A. scirpaceus is not known to breed south of c. 30°N in northwestern Africa (Heim de Balsac & Mayaud 1962).

Conclusion

Only in its more rounded wing does *A. baeticatus* differ greatly from *scirpaceus*, and this is probably no more than an adaptive character. In southern Africa the races of *A. baeticatus* with the longest wings, the nominate and *hallae*, are known to be migratory (Clancey 1975). In the northern tropics Fry & Ferguson-Lees (1977) comment on an increase in wing length away from the equator, and at least some of the northerly, long-winged populations appear to be seasonal migrants (Fry *et al.* 1974).

The only definite case of hybridisation between *A. scirpaceus* and the largely sympatric *A. palustris* involved a male *scirpaceus* with an aberrant mixed *palustris-scirpaceus* song (Lemaire 1977, Helb *et al.* 1985): this suggests that, once the vocal barriers are broken down, small though significant differences in plumage characters (in size, colour, wing formulae, bill length and shape) fail to maintain specific separation. With the exception of size, the European and African Reed Warblers are much more similar in plumage than either is to *A. palustris* (*e.g.* Williamson 1974, Dowsett-Lemaire & Dowsett 1979), and they have similar ecological requirements and habits. Above all, their territorial songs sound identical and the birds themselves react strongly to both European and African repertoires. It is therefore a logical conclusion that *A. scirpaceus* and *baeticatus* (including *cinnamomeus*) are still components of but one species, for which the earlier name is *A. scirpaceus*. It seems likely that their breeding ranges have become separated as the Sahara desert has extended. The recognition of both Palaearctic and Afrotropical populations of one species is not without precedent, examples being the Black and the Yellow-billed Kites *Milvus migrans migrans* and *M.m. parasitus*.

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A review of "Nelson's Gull *Larus nelsoni*"

by Joseph R. Jehl, Jr

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In 1884, H. W. Henshaw described Nelson's Gull *Larus nelsoni* on the basis of a single specimen from the coast of Alaska. Similar in size and coloration to the Glaucous Gull *L. hyperboreus,* it differed in having a slightly darker mantle and lightly patterned primaries. Shortly thereafter, 6 additional specimens were reported. Dwight (1906) reviewed these and agreed with Henshaw that Nelson's Gull appeared to be "a large edition" of Kumlien's Gull *G. glaucoides kumlieni* of the eastern Canadian arctic that deserved species rank. Ridgway (1919) and Rand (1942) also held this view. Dwight (1925) subsequently revised his opinion and considered *nelsoni* as a hybrid between the Glaucous Gull and *L. argentatus vegae*, a dark-mantled, Siberian race of the Herring Gull. As evidence he noted (1925: 250) that specimens were rare and that no two were "marked alike, but the pattern of the primaries is just what would be expected if the black color of *Larus argentatus vegae* were diluted, withdrawn or diminished in varying degree"; and in addition that adult specimens originated (with one exception) in areas "where interbreeding might take place.".

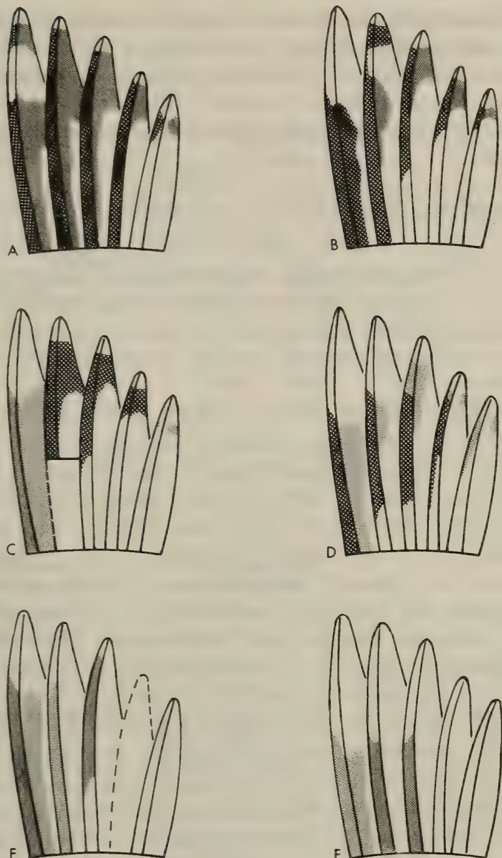
Dwight's interpretation has been generally accepted (e.g. AOU 1957). However, Stegmann (1934) argued that Herring and Glaucous Gulls occur without interbreeding in Europe and were unlikely to hybridize in North America; he viewed *nelsoni* as a hybrid, but between Glaucous and Glaucous-winged *L. glaucescens* Gulls. Godfrey (in Höhn 1959: 110) considered it a rare phase of *L. hyperboreus* and doubted the hybrid origin hypothesis.

In studying a probable Glaucous x Herring Gull specimen (San Diego Mus. Nat. Hist. No 37028) from San Diego, California (Jehl 1971), I was able to examine 6 of 7 Nelson's Gulls listed by Dwight (1906) and Saunders (1896), as well as a specimen discussed by Höhn (1959), and to compare them with 3 *hyperboreus* x *argentatus* hybrids from Iceland (U. Mich. Mus. Zool. Nos 212691-212693), 5 putative *glaucescens* x *hyperboreus* hybrids from Alaska (U.S. Nat. Mus. Nos 272288, 287898, 110438, 308933, 448160), and large series of gulls from western North America. Although the majority of Nelson's Gulls are hybrids, in my view, their parentage seems more varied than Dwight thought. In light of widespread and apparently increasing hybridization among gulls in western North America (Williamson & Peyton 1963, Patten & Weisbrod 1974, Strang 1977, Hoffman *et al.* 1978, Spear in press), a re-evaluation of *Larus nelsoni* seems warranted.

SPECIMENS OF NELSON'S GULL

Adults

United States National Museum (USNM) No 97253. Male, collected St Michael, Alaska, 20 June 1880, by E. W. Nelson. The holotype,described in detail by Ridgway (1919: 595-596), may be characterized as a large "white-winged" gull with a distinct grey-brown pattern on the outermost



A. NMC No 42558. B. San Diego Mus. Nat. Hist. No 37028. C. ANSP No 37629.
D. USNM No 97252 (holotype). E. BMNH No. 51.9.10.2. F. AMNH No 752979.

Figure 1. Wing patterns of adult specimens of "Nelson's Gull *Larus nelsoni*".

5 primaries (Fig. 1D) and a mantle that is slightly darker than in *hyperboreus*. Although it falls within the size range of male Glaucous Gulls, its bill is relatively small (Table 1). In all respects it is closely similar to *hyperboreus* x *argentatus* from Iceland and almost certainly represents that cross (Dwight 1925, Ingolfsson 1970). It is unlikely to represent *hyperboreus* x *glaucescens* (Stegmann 1934), as the primary pattern is more extensive and darker grey than in *glaucescens*, and the bill is relatively small. Both *glaucescens* and *hyperboreus* are heavy-billed species.

British Museum (Natural History) (BMNH) No 51.9.10.2. Unsexed, but probably female, collected "N.W. Coast of America or Bering Strait"; date unrecorded, but likely late July, judged by extent of wing moult. This specimen, described by Saunders (1896: 287-288), appears to be a small example of *hyperboreus* with lightly patterned primaries. Although it is within the size range of *L.h. barrovianus* (Manning *et al.* 1956), it is far smaller than the nominate race of that species. Mensurally it falls close to

the mean for *argentatus* females. Smaller than the type of *nelsoni* (probably owing to sexual differences) and having a paler and somewhat reduced primary pattern (Fig. 1E), the specimen closely resembles 2 *argentatus* x *hyperboreus* hybrids from Iceland (UMMZ Nos 212691-212692). However, similar primary patterns appear in *glaucescens* x *hyperboreus* hybrids.

TABLE 1

Dimensions (mm) of *Larus nelsoni, L. argentatus, L. hyperboreus,* and *L. glaucescens*

	Larus nelsoni						
	USNM 97253 (holotype)	ANSP 37692	NMC 42558	BMNH 51.9.10.2	AMNH 795979	AMNH 61536	BMNH 58.21.136.4.3.4
Age/Sex	A/M	A/M	A/M	A/?	A/F	J/F	J/F
Exposed Culmen	57.7	57.9	61.5	51.3	51.0	54.4	49.9
Bill depth, gonys	20.6	20.9	18.5	17.6	16.0	—	17.9
Bill depth, post nares	20.2	20.1	18.5	16.5	16.8	—	17.9
Wing (chord)	452[a]	436[a]	432[a]	400	410	415	399
Tarsus	72.4	72.8	69.5	66.0	63.5	73.0	64.9
Tail	198	—	189	169	172	176	163

	Sex	**Larus argentatus**[b] Range and mean	**L. hyperboreus**[c] Range and mean	**L. glaucescens**[d] Range and mean
Exposed culmen	M	49–62 (57.0)	55–67 (62.6)	53–64 (57.6)
	F	49–53 (51.0)	56–61 (58.3)	49–55 (51.6)
Bill depth, gonys	M	18–22 (20.3)	21–25 (22.4)	18–22 (20.6)
	F	17–20 (18.0)	18.5–21 (19.9)	18–20 (18.6)
Bill depth, post nares	M	17–22.5 (19.5)	20–24 (21.8)	17–21 (19.7)
	F	16–18 (17.0)	18–21 (19.6)	17–19 (17.8)
Wing	M	405–460 (435.0)	435–477 (459.1)	394–445 (422.6)
	F	397–422 (410.6)	430–450 (439.0)	385–412 (400.5)
Tarsus	M	60–74 (67.8)	69–77 (72.6)	65–76 (69.1)
	F	57–66 (62.1)	64–73 (68.1)	62–69 (64.6)
Tail	M	151–190 (175.2)	180–210 (196.6)	161–187 (177.7)
	F	154–178 (165.3)	182–200 (188.1)	165–176 (171.1)

[a] worn.
[b] 19 males, 16 females; data from Dwight 1925. A=Adult. J=Immature.
[c] 11 males, 10 females; data from Dwight 1925. M=Male.
[d] 14 males, 11 females; data from Dwight 1925. F=Female.

The parentage of this specimen is not clear. Although the pale mantle colour indicates that *hyperboreus* was involved, the primary pattern could result from crossing with *glaucescens* or (back-crossing?) with *argentatus*. The small bill suggests *argentatus* influence; other dimensions are within the range of *hyperboreus* or *glaucescens*.

Academy of Natural Sciences, Philadelphia (ANSP) No 37629. Male, collected Point Barrow, Alaska, 5 September 1897. This pale-mantled, heavy-billed gull, which shows a few traces of brown streaking on the head and occiput, is *hyperboreus* x *argentatus*. In size and mantle colour it is intermediate between those species. Its bill proportions more closely approximate those of *hyperboreus*, while the dark primary pattern (Fig.

1C) shows *argentatus* ancestry. Primaries 6-8 are newly moulted and are slate-grey; primary 9, which is still largely ensheathed, is much darker, approaching slatey-black. The still-unmoulted primary 10 is very pale and probably faded.

American Museum of Natural History (AMNH) No 752979. Female, collected San Geronimo Island, Baja California, Mexico, 18 March 1897. Superficially, this specimen appears to be a Glaucous Gull, but shows several differences that indicate hybrid ancestry: the mantle is darker; the primaries are greyish and have pattern visible on Nos 8-10 (Fig. 1F) and the dimensions are far smaller than *hyperboreus.* The ancestry of this specimen is indeterminable. Judging by primary pattern and coloration, I suspect it represents *glaucescens* x *hyperboreus.* However, similar patterns occur among *argentatus* x *hyperboreus* in Iceland, and the small dimensions also suggest *argentatus.*

National Museum of Canada (NMC) No 42558. Male, collected from breeding colony of Glaucous Gulls on island at mouth of Anderson River, NWT, Canada, 3 August 1955, by E. O. Höhn. Höhn (1959: 110) described the specimen, which fitted the description of *nelsoni,* as an "abnormally coloured individual [of *L. hyperboreus*] with black on the tips of several of the largest primaries . . ." I consider it *hyperboreus* x *argentatus.* Its dimensions are within the size range of either species, but are closer to those of *argentatus,* and its bill is relatively slender. The mantle colour, however, is very pale, as in *hyperboreus,* and the label indicates "soft parts exactly as other Glaucous Gulls from area.". The grey-brown primary markings (Fig. 1A), although paler than those in the San Diego hybrid (Jehl 1971; Fig. 1B), are far more extensive than other examples of *nelsoni* and approach those of *argentatus.* In general the wing pattern is like that of *L. thayeri* and, as in that species, the undersides of the primaries are whitish. This specimen was taken at the treeline in northwestern Canada, an area where hybridization has been inferred by Ingolfsson (1970) and Jehl (1971), and confirmed by Spear (MS).

Immatures

Several unusually-plumaged immature gulls have been referred to *nelsoni.* Dwight (1906: 42) speculated that immatures would look much like *glaucescens,* but "ought to be much larger.". He identified 2 such specimens and noted that their bills were "very heavy;" another was reported by Saunders (1896). Dwight failed to recognize, however, that many individuals of *glaucescens* are as large as *hyperboreus,* and may be even heavier-billed. One of the immatures mentioned by Dwight (AMNH No 26234) could not be found. The other (AMNH No 61536), from Unalaska Island, Alaska, is *glaucesens* in first basic plumage. Its measurements are well within the range for that species and its bill is completely dark; in *argentatus,* and particularly in *hyperboreus,* immatures have a pink base to the bill.

Saunders (1896: 288) referred a female in first basic plumage (BM 58.21.136.4.3.4) from Vancouver Island to *nelsoni.* It is relatively small, falling into the lower edge of the range for *glaucescens* females, which it

resembles in plumage pattern and in the whitish undersides of the primaries. However, its general coloration, including the primaries and rectrices, is darker brown; the rectrices are uniformly dark and lack mottling on the outer rectrix; and the bill is extremely short and heavy. In these respects it is more like *occidentalis*, as Saunders also recognized, and probably represents *glaucescens* x *occidentalis*, a hybrid combination known from the Pacific northwest.

DISCUSSION

Six of 7 published specimens ascribed to Nelson's Gull are evidently hybrids (Table 2). Although the Siberian form of the Herring Gull (*L.h. vegae*) may have been represented in some of the early crosses, (Dwight 1925, Ingolfsson 1970), the recent expansion of Herring Gulls

TABLE 2
Identity of "Nelson's Gulls"

Specimen No	*Probable identification*
USNM 97253 (holotype)	*hyperboreus* x *argentatus*
ANSP 276692	*hyperboreus* x *argentatus*
NMC 42558	*hyperboreus* x *argentatus*
BMNH 51.9.10.2	*hyperboreus* x *argentatus* or *hyperboreus* x *glaucescens*
AMNH 975979	*hyperboreus* x *argentatus* or *hyperboreus* x *glaucescens*
AMNH 61536	*glaucescens*
BMNH 58.21.136.4.3.4	*glaucescens* x *occidentalis*

into western Alaska and northwestern Canada has also resulted in hybridization between the North America race (*L.a. smithsonianus*) and *L. hyperboreus* (Ingolfsson 1970, Jehl 1971, Spear MS). Ingolfsson reported (in litt.) that about 30 specimens from that area could be described as "*nelsoni*". In western Alaska, *L.a. smithsonianus* also hybridizes with *L. glaucescens* (Williamson & Peyton 1963, Patten & Weisbrod 1974). Elsewhere, hybridization between *hyperboreus* and *argentatus* has been described from Bear Island (Bertram & Lack 1933), western Europe and Iceland (Ingolfsson 1970).

Acknowledgements: D. Amadon (AMNH), R. L. Zusi (USNM), W. E. Godfrey (NMC), P. J. Burton (BMNH) and R. W. Storer (UMMZ) kindly loaned specimens in their care. A. Ingolfsson, K. C. Parkes and N. G. Smith commented on the manuscript. Figure 1 was prepared by G. Culver.

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Address: J. R. Jehl, Jr, Hubbs Marine Research Center, 1700 South Shores Road, San Diego, CA, 92109, U.S.A.

Jouanin's Petrel *Bulweria fallax*; a second record from Kenya

by G. R. Cunningham-van Someren

Received 17 September 1986

Britton (1980) records a female *Bulweria fallax* captured alive in floating seaweed off Malindi, 3°13′S, 40°07′E, Kenya Coast, on 13 December 1953. A second living bird was captured in the same bay on 9 December 1985 by B. Boothroyd, but it died the next day. It was deep frozen and later submitted to the National Museum in Nairobi where the writer was able to examine and measure it in detail while it was being prepared as a cabinet specimen.

The specimen was briefly referred to by Gichuki (1985), but no mensural data were available for any specimens to Brown *et al.* (1982: 57), so these are now recorded for the specimen.

Reg. No B9346 in National Museum of Kenya. Male, skull not fully ossified. Testes, orange, small, 5 x 3 mm. Culmen black, 29 mm. Iris appeared dark brown or black. Wing (chord) 240 mm. Longest primary, 9th. Wing-span 83 cm. Tail wedge-shaped, central rectrice 127 mm. Tarsus, black, 32 mm. Toes, blackish with pink tinge, 35 mm (longest without claw). Plumage: head, back, tail and wings near Sepia (119); breast to belly, flanks Neutral Grey (82), throat slightly paler (colours from Smithe 1975).

These measurements may be compared with those given by Brown *et al.*

(1982). The *B. fallax* male is a slightly larger bird than *B. bulwerii* of the western sea-board of Africa. Jouanin appreciated the close similarity of the 2 species and applied the Latin *fallax*=false, verb *fallere* to deceive, as the specific name for his new species.

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Address: G. R. Cunningham-van Someren, National Museums of Kenya, P.O. Box 40658, Nairobi, Kenya.

A new name for *Anthus melindae pallidus* Colston (1982)

by P. R. Colston

Received 12 March 1987

In the *Bulletin of the British Ornithologist's Club* (1982) 102(3): 113 I described a new race of the Malindi Pipit from southern Somalia as *Anthus melindae pallidus* Colston, the type locality being Mallable, 30 km northeast of Mogadishu. I now find that this name is pre-occupied by *Anthus bogotensis pallidus* M. A. Carriker, Jnr 1933 (*Proc. Acad. Nat. Sci. Philadelphia* 85: 34), and lodged in the synonymy of *Anthus hellmayri hellmayri* Hartert, 1909 (*Novit. Zool.* 16: 165). I therefore propose

Anthus melindae mallablensis nom. nov.

for *A.m. pallidus* Colston, 1982, not *A.b. pallidus* M. A. Carriker Jnr, 1933 (Hartert 1909).

Address: P. R. Colston, Sub-dept of Ornithology, British Museum (Natural History), Tring, Herts HP23 6AP.

Books Received

Gooders, John. 1987. *Collins British Birds*. Paintings by Terence Lambert. Pp. 384. Trade paperback. Collins. £8.95 260 x 170 mm.

A re-publication of the 1982 first edition, imaginatively and enjoyably illustrated throughout in colour, together with distribution maps. The text for the 400 or so birds depicted includes sections on voice, habitat, reproduction, range and migrations, catering for many degrees of birdwatching experience.

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Papers, from Club Members or non-members, should be sent to the Editor, Dr J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely to the *Bulletin.* They should be typed on one side of the paper, with double-spacing and a wide margin, and submitted with a *duplicate copy on airmail paper.* Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin.* Informants of unpublished observations should be cited by initials and name only, e.g. ". . . catches wasps (B. Eater)", but "B.B.C. Gull informs me that . . .". Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction. Authors are requested to give their title, initials, name and full address (in the form they wish to be corresponded with) at the end of the paper.

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British Ornithologists' Club

Edited by

Dr J. F. MONK

Volume 107 No. 3 September 1987

FORTHCOMING MEETINGS

Tuesday, 24 November 1987 at 6.15 pm for 7 pm in the **Senior Common Room, Sherfield Building, Imperial College, S.W.7, Dr David T. Parkin** will speak on **"Genetic fingerprinting of wild birds – a new way of looking at bird populations".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on Tuesday, 10 November, if possible*.

This is an excellent opportunity to hear Dr Parkin speak on the development in ornithology of techniques of great interest in many directions.

Tuesday, 19 January 1988 at 6.15 pm for 7 pm at the same venue, **Dr D. W. Snow** will speak on **"The B.O.U. Expedition to Colombia – a progress report".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary (address above) by first post on Tuesday, 5 January 1988, if possible*.

We are fortunate to have as our speaker on Colombia Dr D. W. Snow, President of the B.O.U. and an outstanding authority on Neotropical birds, and to hear from him of the progress of the Union's major expedition there.

Tuesday, 16 February 1988. Dr David Nettleship will show **two of his colour films of Atlantic seabirds** in the Lecture Theatre of the British Museum (Natural History) at 6 pm, after which there will be dinner at Imperial College and he will speak on **"Present status and prospects of seabirds in the N.W. Atlantic".**

March and May 1988. Dates of Meetings and speakers will be announced when the arrangements have been completed.

Monday, 11 July 1988. Dr C. C. H. Eliott will speak on **"The Quelea Problem in Africa".**

*It will be possible to take acceptances up to the weekend before the Meeting, but Members are asked to accept by 14 days before the Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

Many copies of the *Bulletin* must get thrown away annually by members, or their relatives, which the Club would welcome. Please send ALL unwanted copies, and ask your Executors to do the same, to the Hon. Treasurer at 53 Osterley Road, Isleworth, Middlesex TW7 4PW at any time. Postage will be refunded if requested.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 107 No. 3 Published: 18th September 1987

The seven hundred and seventy-second Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 9 June 1987 at 7 pm. The attendance was 17 Members and 14 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, P. J. BELMAN, Mrs D. M. BRADLEY, D. R. CALDER, J. H. ELGOOD, A. GIBBS, B. GRAY, D. GRIFFIN, Dr J. F. MONK, Mrs AMBERLEY MOORE, R. G. MORGAN, Mrs M. N. MULLER, R. E. F. PEAL, G. Z. ROWE, N. H. F. STONE, D. TUTT and Dr A. TYE.

Guests present were: Mrs Z. BALLARD, D. BROOKS, Mrs WENDY BROOKS, P. BULL, Mrs J. CALDER, Mrs F. M. FARNSWORTH, Dr C. J. FEARE, Mr and Mrs STEVE JONES, Mrs ISABEL McCULLOCH, P. J. MOORE, W. J. PEACH, D. M. R. RIDDELL and Mrs HILARY TYE.

Dr C. J. Fears gave an address on "Man and the Starling Family" which was much appreciated. An abstract of his address will be published in a future number of the *Bulletin*.

Evidence for the ancient presence of the Bald Ibis *Geronticus eremita* in Greece

by M. Desfayes

Received 18 February 1987

The legendary birds from Arcadia *Stymphalídes órnithes* or birds of Lake Stymphalus are defined by D'Arcy W. Thompson (*A Glossary of Greek Birds*, 1936) as "fabulous and mystical birds. They were as large as Cranes and resembled the Ibis but had stronger beaks. They were represented . . . on coins, as *crested* waterbirds (431-370 B.C.), B.M. Cat. coins, Peloponnese, p. 199". Thus, a large crested waterbird resembling the Ibis (*Plegadis falcinellus* is the only other ibis occurring in Greece) with a stronger beak can hardly be anything else than the Bald Ibis *Geronticus eremita*. Lake Stymphalus is located in the northeastern Peloponnese. Greece, therefore, should be added to the early breeding range of this species.

The Greeks had another name for the Bald Ibis, *kýmindis*, i.e. the crested one, an apparently Illyrian name cognate to the Albanian *qime*=hair (although the bird is bald, it has a conspicuous nuchal crest), and sometimes described it as a dark coppery bird of the mountains, mentioned among hawks, presumably on account of its hooked bill.

These birds were also named *Arētiádes órnithes*, so called because they were met with by the Argonauts at the island of Dia, or Aretias. This is however only a part of the legends built around this extremely localized species.

G. eremita occurred in Germany, Austria and Switzerland, becoming

extinct there in the 16th or 17th centuries; it is still found in decreasing numbers in Morocco and southeastern Turkey. It is now known to winter in Eritrea and Ethiopia, thus supporting the ancient Greeks statement that "they inhabited Arabia and had migrated thence" (Thompson, *loc. cit.*), Arabia being meant in a broad sense.

Address: Michael Desfayes, chemin de Prévent, 1926 Fully, Switzerland.

Fifty-two Amazonian bird species new to Bolivia

by T. A. Parker, III & J. V. Remsen, Jr

Received 3 October 1986

In the course of field studies of birds in the department of Pando, Amazonian northwestern Bolivia, from 9 June to 8 August 1986, we and our colleagues obtained records of 52 species (42 documented by specimens, 5 by sound recordings, and 5 by sight records) not known previously from Bolivia and the first specimens of one species previously known only from a sight record. Although this number of species new to a country is extraordinary by modern standards, it was not surprising to us because Dpto. Pando, an area nearly as large as Costa Rica, is almost unknown ornithologically. The only previous collecting locality in Dpto. Pando was "Victoria", c. 300 km to the east at the junction of the Madre de Díos and Beni rivers (Gyldenstolpe 1945a). We also report the first records of one species for Peru and one for Brazil.

Our main study site was c. 12 km south of Cobija, then c. 8 km west on the road to Mucden (Mukden on many maps), Prov. Nicolás Suarez, 325 m elevation (hereafter "Camino Mucden"), in the Acre-Purús drainage, at about 11°9′S, 68°51′W. The habitats at the study site were upland tropical forest on somewhat sandy soil, streamside forest with undergrowth dominated by bamboo, second-growth forest at various stages of regeneration, a small marsh, and an extensive cattle pasture; the general topography was rolling hills. The site will be described in greater detail elsewhere (Remsen *et al.* in prep.). Of the 365 species recorded at the site, specimens of 305 (84%) were obtained; we think that this may be one of the most thoroughly sampled sites in Amazonia. Other sites were briefly surveyed in the Porvenir area south of Cobija, and one trip was made by boat c. 40 km up the Río Tahuamanu from Porvenir.

Few localities have been thoroughly sampled for birds in southwestern Amazonia. Those nearest to our Cobija localities are in southeastern Peru and western Brazil and are hereafter referred to as the "nearby" localities: (1) the Tambopata Reserve at the junction of the Río Tambopata and Río La Torre, Dpto. Madre de Díos, Peru (hereafter "Tambopata") (Parker 1982, and unpubl. data), c. 197 km SSW of our Camino Mucden site; (2) Mouth of Quebrada Juliaca on Río Heath, c. 50 km (by river) south of Puerto Pardo, 525 m, Dpto. Madre de Dios (hereafter "Quebrada Juliaca"), Peru,

on the opposite bank of the Río Heath from Bolivia (Graham *et al.* 1980; unpubl. specimen data, Louisiana State University Museum of Zoology – LSUMZ), c. 200 km south of Camino Mucden; (3) Cocha Cashu Biological Station, Manu National Park, Dpto. Madre de Díos (hereafter "Manu") (Terborgh *et al.* 1984), Peru, c. 280 km WSW of Camino Mucden; (4) Balta, Río Curanja, Dpto. Ucayali (O'Neill 1969, 1974), Peru, c. 285 km WNW of Camino Mucden; (5) several localities (Rio Iquiri, Plácido de Castro, Rio Branco) in Acre, Brazil (Pinto & Camargo 1954), 177–212 km NE of Camino Mucden; (6) several localities on the upper Rio Purús, Amazonas, Brazil (Snethlage 1908, Gyldenstolpe 1951, Haffer 1974), c. 310 km (Porto Alegre, Monte Verde, Bom Lugár), 520 km (Cachoeira), or 560 km (Hiutanaã="Hyutanahán") NE of Camino Mucden.

All specimens are housed at the LSUMZ or the Museo Nacional (MNB) (La Paz, Boliva). Unless noted otherwise, all sound recordings are deposited at the Library of Natural Sounds (LNS), Laboratory of Ornithology, Cornell University. For identification of initials of observers other than the authors, see Acknowledgements.

VARIEGATED TINAMOU *Crypturellus variegatus*

Heard almost daily at Camino Mucden in upland forest, a habitat that it shared with *Tinamus guttatus* and *Crypturellus strigulosus*. The song of *C. variegatus* consists of a 2 sec long, clear, introductory whistle on one pitch, followed by a short pause, and an accelerating, rising series of up to 8 short whistles. *T. guttatus* gave a similar, but lower-pitched hollow introductory whistle followed by a short pause and then a short note ("whoooooooooo, whooo"). *C. strigulosus,* which seemed to be associated with large treefalls in upland forest, uttered a 6 sec long, slowly rising whistle that began to quaver at the end. The preceding species have probably been overlooked frequently due to a paucity of accurate published information on their voices. A juvenal *C. variegatus* was netted on 2 July, and MSS collected 2 adults 13 July and 6 Aug. Among the nearby localities, this species had been recorded from Tambopata, at nearly 13°S, the southernmost known locality – TAP, unpubl. LNS, Manu, Balta and Hiutanaã.

WHITE-BROWED HAWK *Leucopternis kuhli*

JVR studied one in the canopy of upland forest at Camino Mucden on 19 July; it was attracted by whistled imitations of its call (an explosive "pssseéeeeee-yoo") down from the canopy to within 15 m of the observer. The striking white eyebrow, white underparts, dark slaty upperparts, and dark tail with single conspicuous white band were all seen clearly. TAP also confirmed the identification of the call from listening to JVR's microcassette recording of his imitation of the call made moments after the sighting. Among the nearby localities, it had been recorded at Tambopata, Manu and Balta.

BLACKISH RAIL *Rallus nigricans*

KVR and JAG saw several at the edge of a small marsh bordering a cattle pasture on 29 July. JVR saw one in marshy vegetation along a stream through a field on 4 Aug. On both occasions, the observers noted that the birds were almost as large as a gallinule, were overall dark and unpatterned, and had moderately long, slightly decurved bills; JVR also noted a red iris and greenish bill, and that the bird was mostly dark grey below and dark olive above. Among the nearby localities, it had been recorded only at Tambopata and Manu.

CHESTNUT-HEADED CRAKE *Anurolimnas castaneiceps*

This little known species was heard almost daily at Camino Mucden in tall second-growth along the road and in nearby overgrown gardens surrounded by forest, and also in the latter habitat 2 km west of Porvenir along the road to Cachuelita on 11 and 24 June. In both areas pairs with 1-2 nearly grown young were observed on the ground in dark, damp thickets with an almost impenetrable cover of broad-leaved *Heliconia*-like plants and decaying trunks and limbs of trees on old garden plots thoroughly shaded by even-aged stands of short trees (4-10 m tall) and tall banana plants. Thus, at our sites (and elsewhere in Amazonia; TAP,

unpubl.) *A. castaneiceps* was not the forest-dweller it is reported to be in current literature, e.g. Ripley (1977). The birds were extremely wary and difficult to see in the deep shade of these thickets. While walking on the ground, they regularly flicked fallen leaves and probed debris and rotting wood. The song was an *Odontophorus*-like synchronized duet performed by both adults while standing erect and side-by-side; it began suddenly and loudly with one bird uttering a higher-pitched "ti-too" phrase immediately answered by, and sometimes overlapping with, a "ti-turro" phrase (the terminal part sometimes trilled) of the second bird. This was repeated without pause to produce a long (up to 3-4 minutes) antiphonal series that could be transcribed as "ti-too, ti-turro, ti-too, ti-turro . . .". When disturbed, the birds uttered a variety of soft "tuk" or "tik" notes, as well as barely audible, low-pitched growls 2-3 sec long. TAP collected one at Camino Mucden on 22 June and one 2 km west of Porvenir on 24 June. Among the nearby localities, it had been recorded only at Tambopata and Balta, but apparently not yet from Brazil, the border of which is only 13 km north of our site.

BLUE-HEADED MACAW *Ara couloni*

Pairs of this small macaw were observed and tape-recorded as they flew over forest and a clearing near the north bank of the Río Tahuamanu 2 km west of Porvenir on 10 and 11 June (TAP), and 4 were seen flying across the Tahaumanu c. 10 km west of Filadelphia on 15 June (TAP, EIF). Noted only 3 times at Camino Mucden and only in flight. In both areas, particularly along the Tahuamanu, it was greatly outnumbered by the similarly-sized *A. manilata,* which was seen daily in flocks of 4-6, and occasionally up to 20. The voices of these species are easily distinguished: *couloni* uttered soft, slightly nasal and raspy flight calls ("raah-raah") at irregular intervals, whereas *manilata* gave more squealy calls often and in chorus. TAP also saw pairs of *couloni* 1 km north of Brasilea on 26 June and at Capixaba, c. 80 km SW of Rio Branco on 27 June. Both localities are in Acre, Brazil, and are the first records for that country. Among the nearby localities, it had been recorded at Tambopata (where uncommon and irregular), Manu and Balta. This macaw seems to survive in cutover areas with scattered patches of forest and may be expanding its rather small range in southwestern Amazonia.

SCARLET-SHOULDERED PARROTLET *Touit huetii*

Tape-recorded and seen 7 times by TAP along the Porvenir-Filadelphia road on 6 days between 11 and 25 June. Noted in tightly knit flocks of 10-16 birds that flew high overhead whilst constantly giving raspy calls ("juwee"). 4 flocks (of 10+, 12, 14 and 20+ individuals) were also seen flying over forest and the road at Camino Mucden 16 June – 28 July (TAP, JVR). Among the nearby localities, it had been recorded only at Tambopata. Unrecorded nearby in Peru and Brazil probably because of its very quiet and inconspicuous habits while perched. Its irregular appearances at known localities hint that it might also be nomadic.

ORANGE-CHEEKED PARROT *Pionopsitta barrabandi*

This forest species was noted daily in small numbers at the Camino Mucden site, where single birds (occasionally 2-3) were regularly heard and glimpsed flying low over the canopy or across the road. Although vocal in flight, it was quiet when perched and thus was only occasionally seen in the forest interior (in fruiting trees). The flight call, a smooth, upslurred "kaweeek," is similar to but clearer than the harsher call of *Pionus menstruus,* a fairly common species of riverine forest and forest edge. *Pionopsitta barrabandi* infrequently give guttural "kuk" or "kek" notes, either singly or in short series while flying. CEQ collected one on 15 June, and JVR collected one on 23 July; in both cases, the birds were seen within 5 m of the ground. The only previous record for Bolivia was JVR's sight record from Tumi Chucua (Remsen & Ridgely 1980). Among the nearby localities, it had been recorded from Tambopata, Manu, Balta and Bom Lugár.

BLACK-BELLIED CUCKOO *Piaya melanogaster*

Seen on 9 of 51 days of fieldwork, usually as singles or pairs in the canopy and subcanopy of upland forest, often with mixed-species flocks of canopy insectivores. KVR collected specimens on 3, 4 and 10 July, and JVR collected one on 27 July. Among the nearby localities, it had been recorded only at Tambopata and Balta, but the species is usually uncommon and easily overlooked.

LEAST PYGMY-OWL *Glaucidium minutissimum*

TAP heard from 1-3 daily in upland forest and forest edge at Camino Mucden 16-23 June. Most vocal at dusk and on moonlit nights, they also sang sporadically throughout the day. Subsequently, they were heard regularly, mostly in the canopy of upland forest. JVR collected 2 males lured in by whistled imitations of their song at midday, on 11 July and 1 Aug;

in neither case did the birds descend below 20 m. Among the nearby localities, it had been recorded at Tambopata, Manu, Quebrada Juliaca (recordings, LNS) and Balta, although the latter remains the only specimen locality for Peru.

GREY-RUMPED SWIFT *Chaetura cinereiventris*

Taxonomic treatments of the *cinereiventris-egregia* group of swifts have variously considered *egregia* to be a subspecies of *C. cinereiventris* or a species most closely related to *cinereiventris*. In the absence of a detailed analysis of the systematics of neotropical *Chaetura*, we favour retention of *egregia* as a full species, because it is at least as different, phenotypically, from *cinereiventris* as is *C. vauxii* from *C. pelagica*, a closely related pair with each member currently treated as a species. In fact, we are unaware of published evidence that *cinereiventris* and *egregia* are conspecific or even that they are sister taxa. Sympatry, however, of breeding *egregia* and *cinereiventris* in South America has not been demonstrated. The only previous specimen record for Bolivia of either *cinereiventris* or *egregia* is that of Todd (1916) of one *egregia* specimen (the type) from Dpto. Santa Cruz.

Seven specimens of *cinereiventris* were collected by JAG, KVR, CGS and JVR at Camino Mucden from 25 June to 9 July. Three *egregia* were also collected from the same flocks. Of the 7 *cinereiventris*, 6 exhibited light to moderate head or body moult, 6 showed light to moderate subcutaneous fat, and 6 of 6 sexed specimens were in nonbreeding condition. The 3 *egregia* specimens all exhibited light to moderate head or body moult, all showed light to moderate fat, and all were in nonbreeding condition. Thus, we cannot rule out the possibility that all individuals of both taxa were migrants from elsewhere. A flock of 25-75 individuals containing both taxa was present nearly daily at Camino Mucden, especially over overgrown fields along the road. *C. cinereiventris* could be distinguished readily in the field from *egregia* by its shorter wing length and darker rump; our estimates of the ratio of *cinereiventris* to *egregia* ranged from 5:1 to 3:1. Also associating with the *cinerievientris-egregia* flock were 2-10 *C. brachyura*, many of which engaged in apparent displays, with pairs usually flying parallel courses near each other with exaggerated, slow wingbeats while giving dry, sharp, slowly delivered *tick* notes. Although the displays led us to expect that the *brachyura* were breeding, the 2 specimens collected were not in breeding condition; one had light and the other moderate fat, and both exhibited body moult. (There was only one previous specimen record of *brachyura* for Bolivia, one from Dpto. Beni-Pearson 1977.)

Among the nearby localities, specimens of *cinereiventris* were known only from Balta, where *egregia* has also been collected.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

TAP saw one flying high over swampy, riverine forest along the Río Tahuamanu c. 2 km west of Cachuelita on 12 June and a pair with a small flock of *Chaetura egregia* high over the *Mauritia* palm swamp 1 km north of Porvenir on 24 June. Noted also by many observers at Camino Mucden on 5 days, and a 2 km west of Porvenir on 15 July. Among the nearby localities, it had been recorded only at Tambopata and Manu.

NEEDLE-BILLED HERMIT *Phaethornis philippi*

This was the common large *Phaethornis* in forest at Camino Mucden, where 53 specimens were netted 16 June – 6 Aug; *P. superciliosus* was also present but only 4 were netted. Although the type of locality is often given as "Bolivia," the origin of the type has been questioned, especially because the type specimen itself is labelled "Peru" (Zimmer 1950); furthermore, the historical loss of Bolivian territory to nearby Brazil and Peru since the type description in 1847 provides further complications. Among the nearby localities, it had been recorded at Tambopata, Quebrada Juliaca, and Cachoeira. Because large *Phaethornis* are usually conspicuous and relatively easy to collect, the apparent absence of *P. philippi* from other localities in the region suggests a patchy distribution.

BLACK-BELLIED THORNTAIL *Popelairia langsdorffi*

JVR studied an adult male at close range at the edge of second-growth forest at Camino Mucden on 19 July and 4 Aug; in both cases the bird searched deliberately the surfaces of large leaves, c. 12 x 10 cm, c. 5 m up in a small tree. On 26 July only a few metres from the same tree, CEQ collected an adult male in a flowering *Inga* tree, apparently a favoured feeding site for this species; Hilty & Brown (1986). Previously, TAP had seen a female *Popelairia*, almost surely of this species, on 9 June in the crown of a tall forest tree with small pink flowers. Among the nearby localities, it had been recorded only at Balta.

WHITE-THROATED JACAMAR *Brachygalba albogularis*

On 15 June, TAP, EIF and Fritz Hertel observed a pair perched in the canopy of 20 m tall

Cecropia trees along the south bank of the Río Tahuamanu between Filadelphia and Cachuelita. They perched quietly on slender branches in the shade of the large leaves and frequently sallied 1-10 m to capture butterflies flying by, including small sulphurs (*Eurema* sp.) and purplewings (*Eunica* sp.), and wasps. The birds called infrequently (a plaintive, upslurred "psueeet") and could easily have been overlooked. Among the nearby localities, it had been recorded at Tambopata, Balta and Monte Verde.

BLUISH-FRONTED JACAMAR *Galbula cyanescens*

On 14 and 15 June TAP found several pairs in mixed-species flocks, 12-20 m up in tall forest on the banks of the Río Tahuamanu c. 10 km west of Filadelphia; TAP also saw 2 pairs in second-growth at the edge of swampy forest near Cachuelita on 25 June. One was netted in streamside bamboo at Camino Mucden on 9 July, 3 on 17 July, and one was collected by JAG on 30 July. *G. cyanescens* is apparently replaced by *G. ruficauda* in Bolivia south of the Río Madre de Díos, as at Victoria (Gyldenstolpe 1945a). Among the nearby localities, it had been recorded from Tambopata, Quebrada Juliaca, Manu, Balta, Rio Iquiri, Rio Abunã, Bom Lugár, Monte Verde, Ponto Alegre, Cachoeira and Hiutanaã.

BRONZY JACAMAR *Galbula leucogastra*

TAP tape-recorded one in upland forest at Camino Mucden on 17 June. JVR saw and tape-recorded (Florida State Museum) one at Camino Mucden in a mixed-species flock of forest canopy insectivores on 4 July, and JAG saw one there on 9 July. JVR collected one from such a flock on 21 July and collected a pair high above a treefall gap on 24 July. The nearest previously known locality (for *G.l. chalcothorax*) was c. 500 km northwest at João Pessõa, Rio Juruá, Amazonas, Brazil (Gyldenstolpe 1945b).

Two subspecies of *G. leucogastra* are currently recognized, the nominate subspecies (to which our Pando specimens are assigned) and the western form *chalcothorax*. To be consistent with current species-level taxonomy in the Galbulidae (Haffer 1974), we strongly recommend recognition of *chalcothorax* as a full species. At present, allopatric jacamars in Amazonia that show marked phenotypic differences and no signs of interbreeding are given full species status (although we recognize that these taxa may be "oversplit"), i.e. *Galbalcyrhynchus leucotis* – *G. purusianus*, *Galbula albirostris* – *G. cyanicollis*, *Galbula tombacea* – *G. cyanescens* – *G. ruficauda*, and *Brachygalba* spp. Except for the *Brachygalba* group, *chalcothorax* differs more from nominate *leucogastra* than do any of the forms from one another within the above superspecies, most of which differ from one another by only one plumage character. *G. chalcothorax* is strongly tinged reddish-purple, whereas *G. leucogastra* is bronzy-green; the white belly that is so conspicuous in *leucogastra* is reduced to a few white feather tips on a generally blackish belly in *chalcothorax*; and *chalcothorax* is noticeably larger than *leucogastra* (measurements in Haffer 1974). Apparently, the only reason that Haffer did not elevate *chalcothorax* to species status was that the substantial gap between its known range and that of the nominate subspecies left open the possibility that the 2 forms might or do interbreed if and where they come together. We believe that the strong differences between the forms in the absence of major river barriers between their ranges suggests that no interbreeding occurs or would occur. An appropriate English name for *G. chalcothorax* would be "Purplish Jacamar".

BROWN-BANDED PUFFBIRD *Notharchus ordii*

MSS collected a pair from high in the forest canopy at Camino Mucden on 23 June. This was our only record in 54 days of field work at that site. The nearest previously known localities were north of the Amazon at Tefé, Amazonas, Brazil, and south of the Amazon in eastern Pará, over 985 and 1800 km to the north and northeast, respectively. Clearly, this species occurs in low densities and is very difficult to detect.

FULVOUS-CHINNED NUNLET *Nonnula sclateri*

JVR collected one in second-growth forest at Camino Mucden on 6 July, and on 28 July JVR collected another, found by CGS, in a bamboo patch along a road. Six additional specimens were netted along a stream at the forest edge, mainly in or near bamboo thickets 10 July – 4 Aug. The nearest previously known locality was Balta, and it was known from perhaps as few as 6 localities and c. 20 specimens in the Juruá, Purús and Madeira drainages.

GOLDEN-COLLARED TOUCANET *Selenidera reinwardtii*

Noted daily, mainly in the middle storey and canopy of upland forest at Camino Mucden. Its distinctive, guttural, nasal song ("gyow, gyow, gyow, gyow, . . .") was heard at all times of the day. 12 specimens were netted or collected 3–30 July. Among the nearby localities, it had been recorded at Tambopata, Quebrada, Juliaca, Manu and Balta.

BAR-BELLIED WOODCREEPER *Hylexetastes stresemanni*

A pair was netted in forest at Camino Mucden on 24 June, our only certain record in 54 days of fieldwork; thus, this species must have very large territories, as found by Willis (1982) for *H. perrotti*, or very specific and narrow habitat requirements. Among the nearby localities, *H. stresemanni* was known only from Rio Iquiri and Hiutanaã (Cory & Hellmayr 1925). Previously published sight records from Manu (Munn & Terborgh 1979) were subsequently considered invalid (Terborgh *et al.* 1984).

POINT-TAILED PALMCREEPER *Berlepschia rikeri*

TAP saw 3 in a Mauritia palm swamp c. 1 km north of Porvenir on 10 June. CEQ, JAG, and KVR collected 2 there on 18 July. The Porvenir birds crept about the green palm fronds, often hanging nearly upside down, while using the tail as a brace, to probe curled, green blades of the fronds. Only occasionally did they search dead fronds hanging near the trunks. *B. rikeri* would be quite difficult to detect were it not for its distinctive song, usually a rapid, staccato, antiphonal duet (occasionally only one bird sings) that consists of a soft introductory phrase followed by a loud, accelerating 4-5 sec series on one pitch ("ka-koo, didididididididididi"). These vocalizations are rather woodpeckerlike and could be confused at a distance with the slower, softer song of *Colaptes punctigula*, a species that frequents the same habitat. Among the nearby localities, *B. rikeri* had been recorded only at Tambopata. It was first found there on 8 Aug 1981 by Derek Scott in *Mauritia* along the edge of Laguna Cocococha; currently, 3 pairs inhabit the palm groves along this oxbow lake (TAP, LNS), which is still the only known Peruvian locality. Otherwise, the nearest specimen localities are on the Río Juruá, Amazonas, Brazil (Gyldenstolpe 1945b), c. 500 km to the northwest. *B. rikeri* is undoubtedly more widespread than indicated in the current literature; its restriction to palm swamps, to which access is usually difficult, makes its detection difficult.

PERUVIAN RECURVEBILL *Simoxenops ucayalae*

A pair was seen or heard daily in bamboo-dominated undergrowth along a stream at Camino Mucden until netted on 27 and 28 June. KVR photographed an unattended juvenal there on 29 June. As noted by Parker (1982) and Terborgh *et al.* (1984), *S. ucayalae* is found mainly in bamboo thickets. The pair moved through a section of forest that covered at least 4-5 ha. Among the nearby localities, it had been recorded at Tambopata, Manu and Balta and was known previously from only c. 17 specimens (Parker 1982).

OLIVE-BACKED FOLIAGE-GLEANER *Automolus infuscatus*

This widespread foliage-gleaner was common and noted daily in upland forest at Camino Mucden, almost always in mixed-species flocks of undergrowth insectivores that usually consisted of a pair or family group each of *Thamnomanes ardesiacus, Myrmotherula longipennis, M. haematonota, M. axillaris, Habia rubica, Hylophilus ochraceiceps*, and often *Xiphorhynchus spixii*, a group membership similar to that of undergrowth flocks at Manu (Munn & Terborgh 1979) and at Tambopata (TAP). As noted elsewhere in western Amazonia (Remsen & Parker 1984), this species fed almost exclusively by searching hanging dead leaves trapped in small palms and vine tangles, usually 1-8 m above ground. 18 specimens were collected 15 June – 4 Aug. Although listed for Bolivia by Meyer de Schauensee (1970), we have been unable to find any evidence of any previous record for the country. Among the nearby localities, this species had been recorded from Tambopata, Quebrada Juliaca, Manu and Balta.

BROWN-RUMPED FOLIAGE-GLEANER *Automolus melanopezus*

At Camino Mucden this uncommon, local species was observed almost daily, mainly in the bamboo understorey of forest, where it searched dead leaves trapped in the crowns of thickets, usually 3-10 m above ground, as noted elsewhere in its range by Parker (1982), Remsen & Parker (1984) and Terborgh *et al.* (1984). Almost always seen in mixed-species flocks dominated by other insectivores that preferred bamboo, namely *Thamnomanes schistogynus, Myrmotherula leucophthalma, Microrhopias quixensis, Drymophila devillei, Simoxenops ucayalae* and *Campylorhamphus trochilirostris*. 9 specimens were collected 23 June – 3 Aug. Among the nearby localities, this species had been recorded at Tambopata, Manu, Balta and Hiutanaã.

DUSKY-THROATED ANTSHRIKE *Thamnomanes ardesiacus*

Fairly common in upland forest at Camino Mucden, where noted daily as a member of undergrowth flocks (see *Automolus infuscatus*). *T. ardesiacus* appeared to be replaced in streamside forest, bamboo and tall second-growth by *Thamnomanes schistogynus*; we never noted both species in the same flock, even though *schistogynus* typically foraged slightly

higher, as found in Peru by Schulenberg (1983). Curiously, at Manu *ardesiacus* is characteristically found in the same flocks as *schistogynus* (Munn & Terborgh 1979), and in northern Peru (TAP) *ardesiacus* is characteristically found in the same flocks as *T. caesius*, the allospecies of *T. schistogynus*. 9 specimens of *ardesiacus* were netted at Camino Mucden 15 June – 4 Aug. Among the nearby localities, it had been recorded at Tambopata, Quebrada Juliaca, Manu and Balta.

SCLATER'S ANTWREN *Myrmotherula sclateri*

TAP saw 2 pairs of this inconspicuous species with mixed-species canopy flocks in tall, river-edge forest along the Río Tahuamanu c. 10 km west of Filadelphia on 15 June. It was also common in the canopy of upland forest at Camino Mucden, usually in mixed-species flocks of canopy insectivores, and less often in pairs or family groups (3-4 birds) away from flocks. TAP observed a pair feeding 2 recently fledged young in a canopy vine tangle on 18 June. 12 specimens were collected by TAP, JAG, KVR, and JVR 17 June – 4 Aug. Our 5 female skins, with 100% ossified skulls, vary markedly in degree of ventral streaking, intensity of ochraceous colour on the head, and blackness of the crown streaks; such variability is presumably responsible for controversy over the validity of *M. kermiti* Cherrie (Zimmer 1932a). Among the nearby localities, this species was recorded from Tambopata and Balta, but it is undoubtedly much more widespread. Known previously from only one specimen from Peru (O'Neill 1969) and about 25 specimens from Amazonian Brazil. See Parker (1982) for additional natural history information.

STREAKED ANTWREN *Myrmotherula surinamensis*

On 12 June a pair was observed in vine tangles and leafy branches overhanging a small pond in swampy forest along the Río Tahuamanu c. 2 km west of Cachuelita along the road to Filadelphia and subsequently was seen feeding 2 nestlings on 25 June (TAP, Bruce Glick). The nest was a small cup of green mosses and a few dried leaves and was decorated with strands of white fungus-like material seemingly identical to material often used by *Myiozetetes* flycatchers. The nest was in a fork of a slender branch c. 0.6 m above water. On 14 and 15 June, 3 pairs were observed in the foliage of trees and vines overhanging an oxbow lake c. 10 km west of Filadelphia, their small territories being spaced linearly along the lake edge. The birds foraged from near the water's edge up as high as 12 m and occasionally joined mixed-species flocks that wandered out of adjacent low-lying forest. As noted elsewhere in its range (Remsen & Parker 1983), *M. surinamensis* was found exclusively near water. Several types of vocalizations were tape-recorded. Among the nearby localities, it had been recorded at Tambopata, Manu and Hiutanaã.

STIPPLE-THROATED ANTWREN *Myrmotherula haematonota*

Common and noted daily at Camino Mucden in upland forest as a characteristic member of mixed-species flocks of undergrowth insectivores (see *Automolus infuscatus*). 23 specimens were collected 16 June – 5 Aug. As noted elsewhere in western Amazonia (Remsen & Parker 1984), *M. haematonota* feeds almost exclusively by searching dead leaves hanging or trapped in the undergrowth, usually within 1-3 m above ground. At Camino Mucden, the closely related *M. leucophthalma*, another dead-leaf specialist (Remsen & Parker 1984), also occurred, but overlapped only slightly with *haematonota* in habitat preference: *haematonota* was found only in upland forest, whereas *leucophthalma* occurred mainly in bamboo-dominated undergrowth and tall second-growth near streams. Their sympatry, along with vocal differences, should remove any lingering doubts concerning the species status of the 2 forms (see e.g. Zimmer 1932a). T. S. Schulenberg has also found both species at the same locality on the north bank of the Río Madre de Dios east of Puerto Maldonado, Dpto. Madre de Dios, Peru. Among the nearby localities, *M. haematonota* had been recorded only at Cachoeira. We also have an unpublished specimen (LSUMZ 68112) from Acre, Brazil, collected by José Hidasi at Rio Branco on 28 May 1968.

Because of differences in size and plumage, we concur with Hilty & Brown (1986) in treating Andean foothill representatives of the *haematonota* group, currently regarded as subspecies of *M. haematonota*, as a full species, *M. spodionata*; this species should include the taxon *sororia* of Peru. An appropriate English name would be "Foothills Antwren".

LONG-WINGED ANTWREN *Myrmotherula longipennis*

A common member of mixed-species flocks of insectivores in the undergrowth of upland forest at Camino Mucden (see *Automolus infuscatus*). Typically it moved along the slender branches of understorey trees 4-12 m above ground and gleaned the underside of live leaves and twigs. 18 specimens were collected 16 June – 5 Aug. Among the nearby localities, this species had been recorded at Tambopata, Quebrada Juliaca, Manu, Balta and Hiutanaã.

CHESTNUT-SHOULDERED ANTWREN *Terenura humeralis*

At Camino Mucden, this inconspicuous species was noted regularly in upland forest, exclusively in mixed-species flocks of canopy insectivores (see Parker 1982, Munn 1985), usually associating with *Philydor erythropterus*, *Xenops rutilans*, *Hylophilus hypoxanthus*, *Tachyphonus cristatus* and *Hemithraupis flavicollis*, among others. TAP collected one on 21 June, and KVR collected singles on 7, 19 and 25 July. Among the nearby localities, this species had been recorded at Tambopata, Manu and Hiutanaã. The rarity of *T. humeralis* in collections is such that there are only 2 specimen localities for Peru: on the north bank of the Amazon at Pebas (Zimmer 1932b) and on the south bank at E. bank Quebrada Vainilla, c. 10 km SSW mouth Río Napo, where 3 previously unpublished specimens (LSUMZ) were collected by Steven W. Cardiff 22-29 July 1983. The listing for Dpto. Junín, Peru, by Meyer de Schauensee (1966) presumably refers to the female from Ropaybamba that Zimmer (1932b) could not identify to species; but the altitude of Ropaybamba, 2440 m (Stephens & Traylor 1983), however, would indicate that this female is best referred to *T. callinota*, a cloudforest species (Parker *et al.* 1982).

Cercomacra sp. nov.

This undescribed antbird, soon to be named by John Fitzpatrick (see Terborgh *et al.* 1984), was fairly common in nearly pure stands of spiny bamboo (*Guadua* sp.) about 2 km west of Porvenir along the road to Cachuelita and within 1 km of the Río Tahuamanu; 5 specimens were collected by TAP, JVR, and CGS on 24 June and 15 July. It was found in pairs that stayed well hidden in the tangled upper branches and leafy crowns of thickets 2-12 m above ground. Males and females stayed close together as they moved through the dense cover; they perch-gleaned (and occasionally sally-gleaned) bamboo leaves and stems, often lunging at small insects on foliage and sometimes hanging nearly upside down to reach more distant substrates. Territories of 3 pairs, estimated to be 0.5-1.0 ha, encompassed large areas of pure bamboo that were fully exposed to the sun, as well as a smaller portion of somewhat taller, more shaded bamboo mixed with vines and the lower branches of trees in the adjacent second-growth woodland. This species is clearly an edge bird. In Peru it occurs in pure bamboo along river edges (Tambopata Reserve) or road edges (Pilcopata area). It seems to be replaced in bamboo which is within taller, more mature forest by the ecologically similar *Drymophila devillei*. Interestingly, the *Cercomacra* sp. nov. was found in the Río Tahuamanu basin only in an area extensively cleared by man and subsequently overgrown with bamboo. Further west along the same river, TAP found only *C. nigrescens* in river-edge bamboo, and only *C. serva* was noted in bamboo understorey at Camino Mucden. These 3 *Cercomacra* species appear to be patchily distributed, being present in some seemingly suitable areas and absent in others. On 27 June TAP noted extensive thickets of spiny bamboo at several places along the Brasilea-Rio Branco road, Acre, Brazil; *Cercomacra* sp. nov. and other bamboo specialists mentioned in this paper undoubtedly occur there. The *Cercomacra* sp. nov. had previously been recorded only at Tambopata, Manu and Balta.

WHITE-LINED ANTBIRD *"Percnostola" lophotes*

This little known antbird was fairly common in the bamboo habitat 2 km west of Porvenir described under *Cercomacra* sp. nov., where 3 specimens were collected by TAP on 24 June. Also, JAG collected one at Camino Mucden in a bamboo-*Heliconia* thicket near the roadside in disturbed forest along a stream on 15 July, where subsequently, at least 2 pairs were noted daily. *P. lophotes* was found in closely associating pairs that foraged on the ground and in the lower branches of thickets. See Parker (1982) for natural history notes for this rare species, which was known previously from only c. 21 specimens. Among the nearby localities, it had been recorded only at Tambopata and Manu. This antbird is probably increasing and spreading through bamboo that is colonizing cleared areas along roads and abandoned gardens in southwestern Amazonia.

SPOT-WINGED ANTBIRD *Percnostola leucostigma*

Fairly common at Camino Mucden along forest streams, where it foraged on the ground and also low in dense undergrowth, especially ferns. 20 specimens were collected 18 June – 29 July. Among the nearby localities, this species had been recorded only at Hiutanaã.

GOELDI'S ANTBIRD *Myrmeciza goeldii*

Fairly common in bamboo understorey of second-growth woodland c. 2 km west of Porvenir, and also in the undergrowth of tall, swampy forest along the Río Tahuamanu west of Cachuelita, especially in or near thickets of *Heliconia* and bamboo. Also, JVR collected an adult female on 2 July in a bamboo thicket at Camino Mucden; the absence of other records

from this locality indicated that it was almost certainly a wandering individual from low-lying forest elsewhere. See Parker (1982) for natural history notes for this species, known previously from only c. 10 specimens from southeastern Peru and southwestern Brazil (Tambopata, Manu, Balta, Bom Lugár and Ponto Alegre).

SOOTY ANTBIRD *Myrmeciza fortis*

Noted daily at Camino Mucden at or near army ant swarms in upland forest and occasionally in second-growth. Pairs wandered widely through large areas. 14 specimens were collected 16 June – 1 Aug. Among the nearby localities, this species had been recorded at Manu, Balta and Rio Iquiri.

REDDISH-WINGED BARE-EYE *Phlegopsis erythroptera*

On 24 July, JVR saw 2-3 individuals scolding in the vicinity of a juvenal caught in a mist net; later in the day, 2 adults were captured in the same net line. The nearest published locality for this species is Arimã on the Rio Purús (Todd 1927), c. 840 km northeast of our site. Pinto (1938) and Meyer de Schauensee (1966) indicated that the range of *P. erythroptera* includes the Rio Juruá, but we are unable to find any published locality records from this region nor were any listed by Gyldenstolpe (1945b).

STRIATED ANTTHRUSH *Chamaeza nobilis*

TAP and JAG collected one of a pair in upland forest at Camino Mucden on 21 June. JVR heard and saw 1-2 individuals in the same area on 4 days 26 July – 6 Aug. See Parker (1982) for natural history notes on this species. Among the nearby localities, it had been recorded at Tambopata, Manu and Balta.

RUFOUS-CAPPED ANTTHRUSH *Formicarius colma*

Fairly common in upland forest at Camino Mucden, usually seen singly, always on the ground, and occasionally at ant swarms. Three specimens were collected by MSS, JAG and JVR, and 5 more were netted 15 June – 29 July. Among the nearby localities, this species had been recorded at Tambopata, Quebrada Juliaca, Manu, Balta, Rio Iquiri, Bom Lugár and Ponto Alegre.

THRUSH-LIKE ANTPITTA *Myrmothera campanisona*

TAP collected one on 18 June in dense undergrowth near a stream in upland forest at Camino Mucden, and JVR collected one found there by MSS on 24 July. Only a few others were heard, all in thick undergrowth of forest treefalls or along streams. Among the nearby localities, *M. campanisona* had been recorded at Tambopata, Manu and Balta.

WHITE-LORED TYRANNULET *Ornithion inerme*

This small, vireo-like flycatcher was fairly common in all forest types visited, but might have been overlooked entirely but for familiarity with its song (see Parker 1982). Noted daily in the canopy of riverine forest along the Río Tahuamanu and upland forest and tall second-growth at Camino Mucden in small numbers, either with large, mixed-species canopy flocks or solitarily. JAG and KVR collected 2 specimens, including a juvenile, on 6 July, and KVR collected one on 15 July. Among the nearby localities, this species had been recorded at Tambopata, Manu and Balta.

LONG-CRESTED PYGMY-TYRANT *Lophotriccus eulophotes*

This little known species was fairly common in riverine forest, swamp forest, and second-growth along the Río Tahuamanu west of Porvenir and Cachuelita, where it preferred shaded bamboo undergrowth along edges. Noted at Camino Mucden almost daily in bamboo thickets and tall road-edge second-growth, as well as at certain large treefalls in upland forest. Usually found singly but sometimes with mixed-species flocks in bamboo. *L. eulophotes* typically made upward sallies under 1 m in distance to leaves and stems, mainly 4-10 m above ground. Most individuals behaved as if territorial and often uttered a rapid series of 5-8 "tic" notes and occasionally gave a short, slightly descending trill. 2 specimens were collected 2 km west of Porvenir 17 June (TAP) and 15 July (JVR), 7 additionally by JVR, KVR, CEQ, and JAG at Camino Mucden 21 June – 25 July. Previously known only from 11 specimens, 5 in the type series from Hiutanaã, 4 from Balta and 2 previously unpublished specimens from Altamira, 400 m, Río Manu, Dpto. Madre de Dios, Peru, collected by C. Kalinowski on 15 Feb and 2 March 1964 (Field Mus. Nat. Hist. #320304-05).

BROWNISH FLYCATCHER *Cnipodectes subbrunneus*

This peculiar flycatcher was fairly common but locally distributed in dense undergrowth of upland and streamside forest, particularly in bamboo. Singing birds were widely and unevenly distributed through the forest. One or two males sang incessantly from a few low

(0.5-1 m) perches in seemingly very small, adjoining territories; they were shy and seemed disinterested in playbacks of their songs, therein behaving in the manner of several manakins, e.g. *Neopelma* spp. and *Tyranneutes* spp. (TAP). This species' lek or lek-like social system, the aberrant structure of its primaries (Zimmer 1939) and its bright red iris makes this a very atypical tyrannid. 15 specimens were collected 18 June – 18 July. Among the nearby localities, this species had been recorded only at Balta.

DUSKY-CHESTED FLYCATCHER *Myiozetetes luteiventris*

Noted daily at Camino Mucden in small numbers, mainly high in the canopy of upland forest in the vicinity of treefalls and at the forest edge. As elsewhere in its range (Remsen 1977), usually observed in pairs, but seen also in groups of 3-4, typically perching on the tops of large leaves in the uppermost layer of foliage. Along edges and in treefalls, individuals perch-gleaned and sally-gleaned small purple fruits of melastomes (a *Miconia*?) and other fruiting trees, and were seen frequently in the tops of forest *Cecropia* (the fruits of which they commonly eat in Peru – TAP). *M. luteiventris* can be overlooked easily without familiarity with its nasal, down-slurred, usually double-noted "chew, chew" call (Remsen 1977) and less often, an explosive "chew-tew-tew". 9 specimens were collected by TAP, MSS, CGS, KVR, JAG and JVR 18 June – 7 Aug. Among the nearby localities, it had been recorded at Tambopata, Manu, Balta and Rio Iquiri. We doubt that this species is an austral migrant, as proposed by Hilty & Brown (1986), because: (a) it does not occur outside the Amazon-Orinoco basins; (b) it occurs in pairs during the austral winter (TAP and JVR); and (c) the only known nest was found by Mark B. Robbins in August 1983 (Lanyon 1984) in the austral winter.

SULPHURY FLYCATCHER *Tyrannopsis sulphurea*

TAP saw a pair c. 1 km N Porvenir on 10 June in the tops of *Mauritia* palms, to which it seems to be restricted in Peru (Remsen & Parker 1983; TAP), where it is found in the interior of swampy forest as well as in clearings, and even in isolated palms around houses; but it seems to be most common in palm groves along the edges of oxbow lakes. Although they often perch in the open on palm fronds, they are more often heard than seen. Calls include a loud, thin "peeeet" or "feeeet", often followed by a chattering call given simultaneously by both birds of a pair. Among the nearby localities, *T. sulphurea* had been recorded only at Tambopata and Quebrada Juliaca (Pampas de Heath); it is probably much more widespread than specimen records indicate.

BLUE-BACKED MANAKIN *Chiroxiphia pareola regina*

Common at Camino Mucden in undergrowth in upland forest, particularly in the vicinity of old, overgrown treefalls. 38 specimens were collected 15 June – 6 Aug. The nearest previously known localities were on the upper Rio Juruá, Brazil (Gyldenstolpe 1945b), c. 500 km to the northwest.

We strongly recommend elevation to full species status of *C.p. boliviana* of the foothills of the Andes of southern Peru and northern Bolivia. Not only are the morphological differences between *boliviana* and *pareola/regina* considerable (Hellmayr 1929), but the song and display of *boliviana* differs markedly from those of *pareola* and *regina* (TAP and LNS). We suggest the English name "Yungas Manakin" for *C. boliviana*.

WHITE-THIGHED SWALLOW *Neochelidon tibialis*

One netted in an open area in second-growth along a small stream on 28 June. Subsequently, a flock of 5-10 was seen irregularly nearby, mainly roosting in a large, isolated tree in a large overgrown garden. From this flock, CGS collected 4 additional specimens on 6 Aug. Among the nearby localities, *N. tibialis* had been recorded only at Rio Iquiri.

VIOLACEUS JAY *Cyanocorax violaceus*

This noisy, usually conspicuous jay was seemingly uncommon in cutover areas with scattered patches of trees and bushes along the Cobija-Porvenir road and west of Porvenir along the road to Cachuelita; also seen in second-growth at the forest edge c. 5 km east of the Camino Mucden site. 4 were collected by CGS and KVR on 15 July c. 20 km by road south of Cobija in second-growth near a stream through cattle pastures. It was encountered in groups of 6-10 that were often seen flying, one bird at a time, across large clearings between wooded areas. Among the nearby localities, *C. violaceus* had been recorded at Tambopata, Manu and Balta.

BUFF-BREASTED WREN *Thryothorus leucotis*

Common to abundant in the undergrowth of swamp forest along the Río Tahuamanu east and west of Cachuelita; also found in the *Mauritia* swamp north of Porvenir and along the

edge of an oxbow lake 10 km west of Filadelphia – at least 10 pairs were heard along the edge of swamp forest bordering 1-1.5 km of the Cachuelita-Filadelphia road on 12 June. Pairs foraged from near the ground in dense undergrowth up to 12 m, especially in vine tangles, where they searched for insects in trapped dead leaves and other debris. 1-2 pairs were also heard and tape-recorded in river-edge thickets of short trees (*Tessaria integrifolia*) and tall grass bordering a taller, vine-covered woodland of *Cecropia;* there, and in several patches of bamboo in swamp forest west of Cachuelita, their territories seemed to abut or slightly overlap those of *Thryothorus genibarbis,* and possible counter-singing bouts between the 2 species were taped. CGS collected one at the edge of the *Mauritia* swamp 1 km north of Porvenir on 18 July. See Parker (1982) and Hilty & Brown (1986) for additional natural history notes on this species. Among the nearby localities, *T. leucotis* had been recorded at Tambopata, Balta, Bom Lugár and Monte Verde. Is evidently replaced in Bolivia south of the Río Madre de Dios by *T. guarayanus,* which has been recorded on the south bank at Victoria, Dpto. Pando (Gyldenstolpe 1945a).

LAWRENCE'S THRUSH *Turdus lawrencii*

TAP and Bruce Glick tape-recorded one as it sang from the canopy of swampy forest along a stream c. 4 km NE of Porvenir along the road to Puerto Rico on 25 June. During one song bout of more than 10 minutes, this individual imitated more than 70 species, including 16 species of antbirds, 15 flycatchers, 5 manakins, and 3 parrots. Some individual *T. lawrencii* mimic more than 100 species in a single bout, including calls and entire (but short) song phrases of their models. Each imitated sound is cleanly separated from others by 4-5 sec intervals. As usual with this species, the above individual did not respond to playbacks of its mimic-type song but continued singing without a pause; it was, however, very responsive to playbacks of its twangy call note, a vocalization that seems to function as a territorial call. JVR also heard and glimpsed another individual, apparently a wanderer, that sang a brief sequence of about 20 imitated vocalizations in the canopy above a stream at the forest edge at Camino Mucden on 18 July, and a second singing endlessly in similar habitat near the cattle pasture on 28 July, where it was subsequently heard by KVR and JAG. This species' habit of singing high in the canopy without moving for long periods of time makes seeing the bird very difficult; its true distribution is no doubt much wider than currently indicated by specimen records. See Parker (1982), Hardy & Parker (1985) and Hilty & Brown (1986) for natural history notes on this rare species. Among the nearby localities, it had been rcorded only at Tambopata and Manu.

MASKED CRIMSON TANAGER *Ramphocelus nigrogularis*

On 14 June TAP observed a flock of at least 6 of these unmistakable tanagers with a mixed-species flock in the lower canopy of riverine forest along the Río Tahuamanu c. 10 km west of Filadelphia, and later saw 12 in the tops of *Cecropia* trees along the river edge, which were in the company of several *R. carbo*; both species were searching the stems and undersides of *Cecropia* leaves. These were the only records obtained during 6 days of fieldwork in the Tahuamanu basin, suggesting that although in typical riverine habitat (Remsen & Parker 1983, Hilty & Brown 1986, Isler & Isler, in press), the above birds were at the extreme eastern boundary of their range in Pando. Among the nearby localities, this species had been recorded at Tambopata, Manu, Balta, Bom Lugár, Monte Verde, Ponto Alegre and Hiutanaã. We also have 2 unpublished specimens (LSUMZ 67844-45) from Acre, Brazil, collected by F. Novaes at Vila Taumaturgo, Rio Juruá, on 27 July 1956.

OPAL-CROWNED TANAGER *Tangara callophrys*

Observed at Camino Mucden on 15 of 51 field days in upland forest, mainly in mixed-species flocks of canopy tanagers that usually included *T. velia* (10 specimens, at this the second locality for Bolivia) and *T. chilensis.* All 3 species characteristically searched for insects on the sides and undersides of branches of canopy trees, particularly deciduous emergents or dead branches of leafy trees, by leaning down from side-to-side in the motion characteristic of many *Tangara* (Snow & Snow 1971; Hilty & Brown 1986; Isler & Isler, in press). *T. callophrys* searched, on the averge, larger branches than the other 2 species, and *T. chilensis*, smaller branches, including twigs 1 cm or less in diameter. JAG collected 5 specimens 19-30 July. Among the nearby localities, this species had been recorded at Tambopata, Manu, Balta and Ponto Alegre.

BUFF-RUMPED WARBLER *Phaeothlypis fulvicauda*

Noted regularly along streams at Camino Mucden. One specimen was netted on 3 July, and 2, including a juvenal, on 7 Aug. Among the nearby localities, this species had been recorded

at Tambopata, Manu, Balta and Hiutanaã. Further south in Bolivia *P. fulvicauda* is replaced by *P. rivularis* at the base of the Andes in Dptos. Beni, La Paz, Cochabamba and Santa Cruz (Remsen & Traylor, in press).

RED-BREASTED BLACKBIRD *Leistes militaris*

We had assumed that the numerous *Leistes* seen in the Cobija-Porvenir area were *L. superciliaris* until CEQ pointed out that a male collected by JAG on 25 July in a cattle pasture at Camino Mucden was *L. militaris*. Subsequently, 15 additional specimens were collected there 28-31 July. Many had enlarged gonads, males were actively singing and displaying, and 2 recently fledged juvenals were collected, showing that these records were of a resident population, not wanderers or migrants. On 26 and 27 June TAP found this species to be common in pastures along the Brasilea-Rio Branco road in Acre, Brazil. Among the nearby localities, *L. militaris* had been recorded only at Rio Branco. As in Colombia (Hilty & Brown 1986), this species may be expanding its range rapidly in southwestern Amazonia in response to the conversion of forest to pasture; if this continues, contact between *militaris* and *superciliaris* of northern Bolivia, often considered conspecific, may be imminent.

Although we acknowledge that Short's (1968) arguments are persuasive for an evolutionary continuum in his expanded genus *Sturnella* from *Leistes* to *Pezites* to *Sturnella sensu strictu*, we are uncomfortable with the merger of *Leistes militaris* and *L. superciliaris* into *Sturnella* because of several behavioural and morphological traits shared with some species in the genus *Agelaius*, especially *A. phoeniceus* and *A. tricolor*. Both *superciliaris* and *militaris* give conspicuous flight song displays with flared epaulets that are remarkably similar to those given by *A. phoeniceus* (and unlike *Sturnella sensu strictu*). Both species have brown, streaked juvenal plumages that are very similar to the juvenal plumages of several *Agelaius* (and unlike *Sturnella sensu strictu*). Both species occur in large, conspicuous flocks that move over relatively long distances like *A. phoeniceus* (and unlike *Sturnella sensu strictu*). Whether these similarities are due to convergence, sharing of primitive characters, or a closer relationship between *Leistes* and *Agelaius* than between *Leistes* and *Sturnella* has yet to be resolved. A further complication is that the species *Leistes bellicosa*, considered by Short (1968) to be a member of a superspecies with *militaris* and *superciliaris*, is more *Sturnella*-like in behaviour (S.W. Cardiff).

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On the Red-throated Wryneck *Jynx ruficollis* Wagler, 1830, in East Africa

by P. A. Clancey

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Jynx ruficollis Wagler, 1830: Korrumus Mtns, Uitenhage, eastern Cape, ranges from Cameroon, the Central African Republic, the southern Sudan and Ethiopia, south in the west to Angola and in the east to Swaziland and eastern and southeastern South Africa. The southern African populations are remotely disjunct, the species as a whole exhibiting a remarkably high level of vicariance. In the east and southeast of the range it is absent between the north of the Transvaal and northern and eastern Tanzania and southwestern Uganda in Kigezi, with only records of vagrants occurring between these 2 blocks of populations. The morphological differences separating the southern isolates from the populations present further north to c. 1°50′N in Africa are relatively minor, but strikingly different to those exhibited by elements occurring still further north in the Ethiopian highlands, west to mid-Cameroon.

Geographical variation in *J. ruficollis* affects general size, the degree of vermiculation and the amount of reddish brown overlay to the otherwise greyish dorsum with its dark mesial streak, the extent of the fine black-and-white barring over the lateral head and fore-throat, and the shade and distribution of the rufous over the throat and upper breast. Plumage colouration is much influenced by environmental factors, the dorsum and wings progressively greying through the action of the sun and wear, while the venter whitens.

In 1915 C. H. B. Grant separated the Kenyan population from that of South Africa as *J.r. cosensi* on the basis of a larger size character. While *cosensi* initially received recognition, albeit frequently qualified, it is currently treated by most workers as a synonym of the nominate subspecies, as in Britton (1980), where only *J.r. ruficollis* is admitted for East Africa. Earlier, research by Clancey (1952) and Traylor (1960) demonstrated incontrovertibly that the nominate race is, in fact, confined to the Republic of South Africa, and is one of 2 races in the detached southern sector of the

species' range. In admitting the validity of *cosensi,* Traylor extended its range far to the west to embrace the Cabindan and Angolan isolates, which view was in part followed later by Pinto (1962; 1983). Pinto recognised both *cosensi* and *J.r. diloloensis* Rosa Pinto, 1962, the latter described from the province of Moxico in eastern Angola on a longer wing character.

A recent examination of material from southern and equatorial Africa confirms that *J.r. cosensi* is a valid taxon but is relatively localized in East Africa, being confined to the interior of Kenya north to c. 1°50′N and west to northeastern Uganda. This population differs from the nominate subspecies of the eastern Cape, Transkei, Natal and Zululand and Swaziland in being more overlaid dorsally with reddish brown in fresh condition, and below in having the gorget darker chestnut, the lower ventral ground yellower and the streaking finer. Size also ranges larger: wings of ♂ ♀ 93–101 *versus* 86–95 mm (see Table 1).

TABLE 1

Wing- and tail-length data (in mm) of material examined of various subspecies of the Afrotropical Red-throated Wryneck *Jynx ruficollis*. Specimens of *J.r. pulchricollis* and *J.r. diloloensis* were not examined, but the available wing-length data of these 2 subspecies in the literature are given in the text above.

	Wings				Tails			
	n	range	mean	SD	n	range	mean	SD
J.r. ruficollis	45	86–95	91.2	2.40	45	65–77	68.7	2.49
J.r. striaticula (southern African)	12	90.5–97	93.6	1.93	12	66.5–74	70.3	2.27
J.r. striaticula (Tanzania, Uganda)	5	91.5–94	93.1	0.96	5	65–71	69.2	1.78
J.r. cosensi	19	93–101	96.4	2.28	17	67–75.5	71.9	2.40
J.r. aequatorialis	21	87–93.5	90.6	2.06	18	65–77	71.8	3.29
J.r. thorbecki	3	90, 90, 90	90.0	–	3	69–77	72.0	4.35
J.r. pectoralis	2	92, 95	–	–	2	70, 74	–	–

Selected statistical comparisons

		Wings	
J.r. cosensi compared with *J.r. ruficollis*	$= t = 7.91$	$p < 0.001$	df 62
J.r. cosensi compared with *J.r. striaticula* (southern African)	$= t = 3.41$	$p < 0.01$	df 29
J.r. cosensi compared with *J.r. aequatorialis*	$= t = 8.24$	$p < 0.001$	df 38

The representatives present to the south of *J.r. cosensi* from eastern Tanzania, east to southwestern Uganda and adjacent eastern Zaire (in Kivu) are greyer dorsally, with the extended blackish brown mesial dorsal streak narrower, often vestigial, the dark 'stars' over the scapulars and tertials smaller. Ventrally, the gorget is lighter red-brown, and the size ranges smaller: wings of ♂ ♀ 91.5–94 mm. This population is virtually identical to that of the dry interior of South Africa described as *J.r. striaticula* Clancey, 1952: Garstfontein, Pretoria, Transvaal, and requires to be associated with it nomenclaturally. *J.r. striaticula* was proposed in the first instance on the basis of being somewhat paler (greyer) above than in *J.r. ruficollis,* described from the eastern Cape, the gorget

much paler (more tawny) and the ventral streaking appreciably finer. A re-examination of *J.r. striaticula* confirms these characters, showing further that the fine blackish and white barring over the lateral head surface is much less sharply contrasted and the ventral ground whiter when freshly moulted.

The probable reason for the highly disrupted range and polarized groupings of elements of *striaticula* is not immediately obvious, but is a corollary of the vicariant history of this widespread but highly fragmented species. *J.r. striaticula* is now seen as comprising 2 populations, one in the north and the other in the south of the range, with only a limited number of records of singletons from intervening areas.

The important *Birds of East Africa* (Britton 1980) overlooks the description of *J.r. pulchricollis* Hartlaub, 1884, as being from near Wadelai on the Albert Nile, Uganda, rather than the Sudan, so that 3 races require to be admitted for East Africa. The names, characters and ranges of these taxa will now stand as follows:

(a) **Jynx ruficollis striaticula** Clancey

Jynx ruficollis striaticula Clancey, *Durban Mus. Novit.* vol iv, 1, 1952, p. 12: Garstfontein, Pretoria, Transvaal.

Differs from *J.r. cosensi* as defined below in being less overlaid with reddish brown dorsally, appearing greyer in newly moulted condition, and with the mesial dorsal stripe narrower and often vestigial; dark 'stars' over the lateral scapulars and tertials smaller, and tail plainer, the transverse barring and the vermiculations less sharply etched. Ventrally, with the gorget lighter red-brown (about tawny) and the fine blackish and white barring over the lateral head less contrasted (as seen in topotypes); the ventral ground is also whiter. Size ranging a little smaller than in *cosensi*.

12 ♂♀ from Transvaal and Botswana: wings 90.5–97 (93.6), SD 1.93; culmens from base 18–21 (19.5), SD 0.86; tails 66.5–74 (70.3), SD 2.27 mm. 5 ♂♀ from Tanzania and Uganda: wings 91.5–94 (93.1), SD 0.96; culmens 17–21.5 (19.5), SD 1.65; tails 65–71 (69.2), SD 1.78 mm.

Range. The plateau of the Transvaal, northern Orange Free State and southeastern Botswana, and further north in eastern Africa from eastern Tanzania (from the Morogoro district), west to southwestern Uganda and adjacent eastern Zaïre (in Kivu). Records of individuals, presumably of the present race, from intervening districts are available from the Save R. in southern Mozambique, Malaŵi (Ncheu) and southeastern Tanzania at Nakapanya (10°56′S, 37°48′E).

Remarks. The specimen believed to represent a hybrid *J. ruficollis* x *J. torquilla* by Desfayes (1969), and rejected by Short & Bock (1972) as an aberrant *ruficollis*, was collected in the east of the northern segment of the range at Kingolwira at 6°47′S, 37°46′E.

(b) **Jynx ruficollis cosensi** Grant

Jynx ruficollis cosensi C. H. B. Grant, *Bull. Brit. Orn. Cl.* vol xxxv, 1915, p. 102: Amala R., Kenya, at 1642 m a.s.l.

Differs from nominate *J. ruficollis* in newly moulted dress, as outlined in the above discussion, in having the dorsum more overlaid with reddish

brown. Ventrally, with a darker red-brown gorget (chestnut), the breast and sides with the ground yellower and the dark shaft-streaking finer, and with the lower flanks less boldly barred. In series, most have the under tail-coverts noticeably rusty in colour. Size ranging appreciably larger (see Table 1).

19 ♂♀ : wings 93–101 (96.4), SD 2.28; culmens from base 18–22 (20.1), SD 0.96; tails (of 17) 67–75.5 (71.9), SD 2.40 mm.

Range. The interior of Kenya, generally above 1700 m a.s.l., north to c. 1°50′N and west of 38°E, extending west to the north of L. Victoria to eastern Uganda (Mt Elgon and Sebei – Kapchorwa district).

Remarks. A single male from the North Uaso Nyiro R., Kenya, in the collection at Tring has a wing of only 90 mm, and shows a shift towards part of the character state of *J.r. aequatorialis*. In the case of the latter subspecies, a short series from Yabelo (=Yavello), in the south of Ethiopia at 4°50′N, 38°10′E, in turn approaches *cosensi* in the colour of the ventral surfaces.

(c) **Jynx ruficollis pulchricollis** Hartlaub

Jynx pulchricollis Hartlaub, *Ibis* Ser. 5 (2), 1884, p. 28, pl. 3: Babira, 24.1 km S of Wadelai, Albert Nile, northwestern Uganda (*vide* Grant & Mackworth-Praed, *Bull. Brit. Orn. Cl.* vol lix, 1939, pp. 73–74).

Deeper reddish or ochreous brown above than in *cosensi*. Fine black-and-white barring on lower head extended across the upper fore-throat, restricting the pectoral red-brown to the lower throat and upper breast. Lower ventral streaking and ground colour as in *cosensi;* under tail-coverts deep tawny. Size smaller, but I have not examined any. Mackworth-Praed & Grant (1952) give the wings of *pulchricollis* as 90–94 mm.

Range. Occurs locally north of the Lower Guinea Forest from the south of the Central African Republic, adjacent northern Zaïre, east to southern Sudan to the west of the White Nile, and northwestern Uganda on the Albert Nile.

Remarks. Sclater (1924) believed the Type to be unique and from the Sudan, but Grant & Mackworth-Praed (1939) record that it is one of the 3 collected by Emin Pasha at Babira, the type-locality, and Buguera, both near Wadelai on the Bahr el Jebel (=White Nile). northwestern Uganda. The paratypes collected by Emin are in the collection of the Zoological Museum, Berlin. There appear to be no recent records from near the type, locality.

Comments on other subspecies

Of the estimated 7 subspecies of *J. ruficollis*, comments given above deal with 4 forms; notes on the other 3 (or 4) forms resulting from the present research are as follows:

1. *J.r. aequatorialis* Rüppell, 1842: Shoa, central Ethiopia.

This taxon occurs immediately to the north of *J.r. cosensi* in the highlands of Ethiopia. Compared with *cosensi, aequatorialis* is darker on the upper-parts, less washed with warm brown, with the dark 'stars' over the scapulars and tertials larger and blacker. Ventrally, the rufous of the fore-throat is extended towards the tail to cover the entire breast, while the

mid-venter is more buffish white with vestigial narrow dark shaft-streaking. The flanks, crissum and under tail-coverts are pale tawny, and the tail is both darker and more coarsely barred and vermiculated. Interestingly, size is smaller than in the Kenyan population (see Table 1).

While Yabelo, Sidamo, specimens show a shift towards *cosensi* in their ventral characters, there does not seem to be a zone of intergradation between the 2 subspecies, as the species is absent from the xeric north of Kenya.

2. As referred to above, Traylor (1960) extended the range of *cosensi* west to Cabinda and Angola, which view was followed in part by Pinto (1962; 1983). With the limiting here of the range of *cosensi* to the interior of Kenya and northeastern Uganda, the status of the species in Angola and adjacent territories requires to be re-assessed. Unfortunately, there are only 2 specimens from Cabinda and Angola in the collection at Tring, and the material assembled by Rosa Pinto is currently not accessible.

Should the Angolan populations comprise 2 subspecies, as admitted by Rosa Pinto, which *a priori* seems debatable, *J.r. diloloensis* (type-locality: L. Dilolo, Moxico) will be restricted to the east of the territory, northwestern Zambia and adjacent Zaïre, and *Yunx pectoralis* Sharpe & Bouvier, 1878: Portuguese Congo (=Cabinda, Angola), will require to be resuscitated for the differentiates present in the north and on the lower Zaïre R. Workers extending *cosensi* Grant, 1915, to Angola have overlooked the fact that the name is then antedated by the prior *pectoralis*.

The wings of the 2 specimens of *J.r. pectoralis* available to me are 92 and 95 mm. Rosa Pinto (1983) gives the wings of 5 ♂♀ "*cosensi*"=*pectoralis* as 90–93, and of 4 ♂♀ of *J.r. diloloensis* as 99–102 mm.

J.r. pectoralis differs from *cosensi* in its small size (wings 90–95, *versus* 93–101, tails the same 64–74, against 67–75.5 mm). The upper-parts and wings are more heavily overlaid with red-brown, and ventrally the fore-throat is a much darker chestnut. The ventral streaking is as fine as in *J.r. striaticula*.

3. *J.r. thorbecki* Reichenow, 1912: Chang, Cameroon, closely resembles *pulchricollis* in having the dorsal surface dark ochreous brown. It differs ventrally in having the pectoral red-brown less extended towards the tail and in having the lower underside buffier. The size is small – 3 males: wings 90, tails 69–77 mm.

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Rediscovery of *Cinclodes excelsior aricomae* and notes on the nominate race

by Jon Fjeldså, Niels Krabbe & Theodore W. Parker, III.

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On 17 May 1931 M. A. Carriker, Jr collected a very dark, large-billed *Cinclodes* near Aricoma Pass (4572 m) in the Department of Puno, south-eastern Peru. He described it as a new species, *Cinclodes aricomae* (Carriker 1932). This taxon has until recently been known only from the type specimen, but an overlooked specimen exists in the British Museum (89.5.14.56, Tilo Tilo, Prov. Yungas, Bolivia 1876, leg. C. Buckley). Bond (1945) regarded *aricomae* as a subspecies of the Stout-billed Cinclodes *C. excelsior*, a morphologically similar species of bushy paramo habitats in Colombia and Ecuador. This treatment, followed here, has been supported by subsequent authors (Peters 1951, Meyer de Schauensee 1966, 1970, Vaurie 1980). Vaurie (1980) placed *excelsior* in *Geositta*, a decision with which we do not agree (see below).

On 27 June 1982 T.W.P. and J. Rowlett observed an individual of *C.e. aricomae* in the upper part of the Peñas canyon at c. 3600 m, above (N) Ollantaitambo in the Department of Cuzco, c. 245 km northwest of Aricoma Pass. This is the first record of *aricomae* since its discovery by Carriker in 1931. The bird was watched for nearly 30 minutes as it hopped on large, lichen-encrusted and moss-covered rocks in a boggy area bordered by shrubs and small trees. It spent most of this time probing in the moss and flaking off large pieces of moss and earth, presumably to uncover prey items. Several Bar-winged Cinclodes *C. fuscus* were noted in close proximity to the bird, but they were foraging in the adjacent bog (rather than on the rocks). On 27 August 1982 L. McQueen photographed another Stout-billed Cinclodes as it perched on a low branch in a *Polylepis* woodland c. 1.5 km northwest of Abra Malaga at 4250 m, just a few kilometres from the Peñas canyon.

N.K. did not see the species during a 3-day stay in July 1983. On 1-2 December 1983, J.F., N.K. and B. Walker searched in vain for it in the

Peñas canyon; but arriving at the Abra Malaga woodland about 2 hours before sunset on 2 December they then captured 2 Stout-billed Cinclodes in mist-nets. The birds, a male and a female, had flown along the edge of a boggy glade from bogland lower down. Both individuals had enlarged gonads, but the female showed no trace of a brood patch. On the following morning 2 more were seen in the area, first one chasing the other along the wood edge, and then both together hopping, one after the other, along thick branches of a *Polylepis* tree. While interacting, the birds assumed a typical *Cinclodes* posture, with drooping wings and slightly-cocked tails. Bar-winged Cinclodes were common in the area, and were also noted in the woodland, where they may have (as in the case of *excelsior*) been searching for nest sites among the rocks.

Our specimens of *aricomae* were obtained along the edge of a 2 km^2 grove of relatively moist *Polylepis* and *Gynoxys* woodland, on steep terrain with many rocky places, especially under the trees. The ground was covered with coarse grasses (*Luzula*) and thick layers of moss. The *Polylepis* trees, which were from 2-8 m tall, grew in small, dense patches rarely covering more than 100 m^2. The locality is situated near the crest of a ridge that separates the dry, upper Urubamba River valley from the rain-drenched Amazon-facing slopes to the east. For much of the year the mountains are blanketed in clouds; it rains every few days (or for periods of many days), and up to several cms of snow regularly cover the ground, especially during the dry season (June-September).

The *Polylepis* woodland near Abra Malaga supports a rich variety of *Polylepis*-adapted birds (Parker & O'Neill 1980). In addition to several widespread species, e.g., Giant Conebill *Oreomanes fraseri*, Stripe-headed Antpitta *Grallaria andicola* and Thick-billed Siskin *Carduelis crassirostris*, we have recorded 3 species known from only a few scattered localities in Peru and Bolivia:– the Tawny Tit-Spinetail *Leptasthenura yanacensis*, Line-fronted Canastero *Asthenes urubambensis* and Ash-breasted Tit-Tyrant *Anairetes alpinus*. The White-browed Tit-Spinetail *Leptasthenura xenothorax* is only known from the small *Polylepis* patches near Abra Malaga, and from nearby Torontoy.

The *Polylepis* woodlands near Abra Malaga are shrinking from year to year due to the local Quechua demand for firewood, and since 1974 several small groves of trees have disappeared altogether. High priority should be given to the mapping and inventory of remaining stands of this unique habitat. Unknown populations of most of the bird species mentioned above undoubtedly occur in the enormous tracts of unexplored wilderness in the Cordilleras of Vilcabamba, Vilcanota and Carabaya.

Our specimens of *Cinclodes excelsior aricomae* (uncatalogued; Zoological Museum of the University of Copenhagen) have been compared directly to the type (ANSP 101745), with which they appear almost identical. The wing pattern of *aricomae* differs more from that of nominate *excelsior* than Carriker's (1932) description would suggest. On the upper surface of the wing in *aricomae* the rufous basal band on the secondaries and inner primaries is emphasized by the blackish, 1 cm-wide band that borders it posteriorly. Thus the wing of *aricomae* in flight appears blackish

with a pronounced rufous band on the remiges. In nominate *excelsior* the upper wing appears more uniformly pale rufous. On the underwing of *aricomae* the distal half of the secondaries and inner primaries is blackish and contrasts sharply with the cinnamon basal portions of those feathers; whereas in nominate *excelsior* the underwing is wholly pale cinnamon, except for the outermost primaries.

The taxonomic rank of *aricomae* deserves further study. Information on the vocalizations and displays of this little-known form will clarify its relationship to *excelsior.* Though Vaurie (1980) considered *excelsior* to be a member of the genus *Geositta,* we feel that it is a typical *Cinclodes,* both behaviourally (Carriker 1932, Vuilleumier *in* Vaurie 1980: 334 and see above) and morphologically. We are especially impressed by the remarkable plumage resemblance of *C. excelsior aricomae* to the Grey-flanked Cinclodes *C. oustaleti.*

We were also able to make a few comparisons with the much more common Ecuadorian, nominate, race of *C. excelsior.* The latter was usually found in association with *C. fuscus,* which forages in the same manner, but unlike *C. fuscus* was rarely noted in areas completely devoid of bushes. It was often found in thick *Sphagnum* bogs fringed by moss-clad dwarf forest. Individuals probed deeply into the mosses of these bogs, apparently more deeply than *fuscus,* and when disturbed, took cover in the lower to middle branches of nearby bushes and trees. It therefore seemed that, unlike syntopic *C. fuscus,* nominate *C. excelsior* required the taller cover of woody vegetation for shelter. It also seems likely that nominate *excelsior* sometimes pecks and probes into bark crevices and lichens or mosses on trees, as does occasionally the Dark-bellied Cinclodes *C. patagonicus.*

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Recent records of vagrant South American land birds in Panama

by Michael J. Braun & David E. Wolf

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In the course of leading natural history tours to Panama in the years 1979-1985, we obtained sight records of 3 species not previously known from the republic (Ridgely 1981). Taken together with other records from that period, these sightings reveal a pattern of vagrancy involving South American landbirds of open woodlands and savanna. It is possible that this pattern has been caused or greatly enhanced by large scale clearing of forest in Panama and Colombia. Here we give details of our observations and discuss factors which may predispose these species to vagrancy.

RUBY-TOPAZ HUMMINGBIRD *Chrysolampis mosquitus*

An adult male was discovered at the El Real airstrip, Darién Province on 27 January 1985 by D.E.W. and 6 tour participants. What was presumed to be the same bird was still present in the same area on 3 February 1985 when the entire party of 12, including M.J.B., was able to study it. The tail, which was bright rufous with a black subterminal band, was often held fanned open in a colourful display while the bird was perched. The feathers of the hindcrown and nape usually appeared erected in a shaggy crest and the feathers of the forecrown extended onto the base of the bill, making the forehead appear low and sloping. Photographs were obtained by P. Moynihan and are on file in the VIREO collection of the Philadelphia Academy of Natural Science, where their identity has been confirmed by R. Ridgely.

The bird frequented an open copse of small trees in a tall grass pasture near the airstrip. El Real, the largest settlement in the Darién, is surrounded by cut-over pastureland which almost surely represents the largest area of open country in the heavily forested eastern Darién. Thus, this was a reasonable place for *Chrysolampis* to appear, an open country hummingbird, whose known range is in the drier, open habitats of northern and eastern South America, from Colombia to northeastern Bolivia, including the islands off the north coast of South America from Aruba to Trinidad and Tobago (Meyer de Schauensee 1970). In Colombia, *Chrysolampis* is known locally from dry Caribbean lowlands, inter-Andean valleys, and arid rain-shadow valleys of the Western Andes (Hilty & Brown 1986). The closest record to Panama is from Parque Nacional Los Katios (Rodriguez 1982; *fide* W. L. Brown), which abuts the Panama border less than 100 miles from El Real.

GREY-CAPPED CUCKOO *Coccyzus lansbergi*

On 10 February 1980 a single individual was found by V. Emanuel and M.J.B. in open brush along a sluggish stream in marshy pastureland near Tocumen, Panama Province. The diagnostic features of slate-grey crown,

contrasting with dull rufous brown back, and ruddy chestnut throat lightening to cinnamon buff on the abdomen were well seen. Subsequent sightings of this species, both of them also at Tocumen, occurred on 7 Jan 1982 (B. Whitney, J. Rowlett and B. Barth) and 23 Dec 1985 (L. O'Meallie and T. Meyer). Another individual was discovered on 30 January 1985 at Cana, Darién Province by D.E.W. and others. Like the Tocumen birds, this individual was also seen in thickets draped with vine tangles along a small stream.

The normal range includes open woodland, forest edge and savanna in the Caribbean region of northern Colombia from near Cartagena east into Venezuela and south to the northwestern foot of the Andes (Hilty & Brown 1986). On the Pacific slope it is known from southwestern Colombia (one record in upper Anchicaya Valley – Hilty & Brown 1986), western Ecuador (including breeding records – Marchant 1960, R. Ridgely) and northern Peru, rarely south to Lima (Koepcke 1970). Although *C. lansbergi* was reported in the older literature to occur in Panama, Wetmore (1968) found no basis for its inclusion in the avifauna of the country.

DWARF CUCKOO *Coccyzus pumilus*

V. Emanuel and D.E.W. recorded this species on 9 February 1979 in brushy vine tangles in damp pastureland near Tocumen, Panama Province, within 2 miles of the site of the *C. lansbergi* records. The small size, pure medium-grey crown, rich rufous face, throat and upper breast, and creamy-white abdomen were diagnostic. The Dwarf Cuckoo normally occurs in gallery forest, open forest patches, and tree-lined or shrubby pastures in drier regions of northern Colombia from near Cartagena east through the Venezuelan llanos (Hilty & Brown 1986).

Discussion

Records of vagrant South American landbirds are relatively few and have received little analysis. This is true in part because the Neotropical avifauna is still comparatively poorly known, and it is hard to distinguish between records of true vagrants and rare residents. However, the birds of Panama are better known than those of most Latin American countries, so the 3 species mentioned above have probably not been more than rare visitors to Panama in the past. It is therefore interesting to note that they share several characteristics which may predispose them to vagrancy.

First, each is known or suspected to be migratory in at least part of its range. Mention of possible migratory behaviour has been made for the Ruby-topaz Hummingbird in Trinidad (ffrench 1973), the Netherland Antilles (Voous 1983), and Brazil (Ruschi 1982); for the Grey-capped Cuckoo in western Ecuador and Peru (Marchant 1960, Parker *et al.* 1982, R. Ridgely); and for the Dwarf Cuckoo in the Venezuelan llanos (Thomas 1978). Second, all 3 species favour comparatively dry open country, and their ranges may have been limited historically by humid lowland forest, clearing of which by man may have allowed them to expand their range. Range expansion has been documented for the Dwarf Cuckoo in

Colombia (Ralph 1975), where in the last 3-4 decades, the species has invaded the dry inter-Andean valleys and forest clearings on the humid Pacific coast and in western Amazonia. Finally, there are previous vagrant records for each of these species. The Ruby-topaz Hummingbird has occurred once on Grenada (Bond 1971) and at sea off the Netherland Antilles (Voous 1983); the Grey-capped Cuckoo has occurred once on Bonaire (Voous 1985); and the Dwarf Cuckoo has occurred as a wanderer at several Colombian localities which it later colonized (Ralph 1975).

Other species that recently have been recorded in Panama for the first time and seem to fit this pattern of vagrancy or range expansion or both are the Cattle Tyrant *Machetornis rixosus* and the Lined Seedeater *Sporophila lineola* (Ridgely 1981, American Ornithologist's Union 1983), both of which occur in the dry open country of northern South America, while the Cattle Tyrant is believed to be migratory in the southern part of its range. Should destruction of rain forest in northwestern Colombia and eastern Panama continue at its present rate, more Panamanian records of these and other open country species as vagrants and possible colonizers can be expected.

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Variations in Mediterranean Crossbills *Loxia curvirostra*

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Crossbills *Loxia curvirostra* are suitable subjects for research into speciation because they show considerable variation at the population level. There is an extensive literature, both European and American, and there are different theories about the degree of speciation in some populations. For example, Knox (1976) thinks that *scotica* is a good species, while Eck (1981) believes that only 2 species, *curvirostra* (including *scotica* and *pytyopsittacus*) and *leucoptera* should be recognized.

The curious shape of the bill, according to Tallman & Zusi (1984), may have originated following the lateral prising open of seeds by an ancestral Crossbill. This might have favoured the evolution of asymmetrical mandibles through an asymmetrical enlarging of the depressor mandibulae muscle, and the retro-articular process of the lower jaw (an adaptive and mutative complex that is also found in some *Carduelis* – Raikow 1978). This bill structure permits very efficient extraction of seeds from cones.

The aims of my research were as follows: (1) to carry out a biometric analysis of the different Mediterranean populations, in order to examine their relationships with those of North Europe; (2) to establish the extent of variation of the bill in the populations which feed only on pine trees; and (3) to carry out a colour analysis of the populations to investigate the geographic variation.

MATERIALS AND METHODS

I examined the skins of 200 males and 123 females from museums at Tring (BMNH), Paris (MHNP), New York (AMNH), Milan (MSNM), Palermo (MZP) and Terrasini (MCT), and from the private collection of A. Priolo in Catania (see Acknowledgements). The North European skins came from the breeding areas of W Russia and Finland; the French skins originated both from the breeding areas (central Massif, Alps and Pyrenees) and from Normandy and Brittany (50% of the skins), where the species does not breed (Yeatman 1976, Guermer & Monnat 1980) – they were obtained during the 1929–30 irruption. The North Italian skins came from eastern alpine and subalpine localities and represent both breeding and local migratory birds. The Calabrian skins are those referred to by Moltoni (1964) and were obtained by A. Pazzuconi between 1960 and 1963 in the pine woods of the Sila. Skins from island populations originated from typical breeding localities in Mallorca, Corsica, Sicily and Cyprus. The North African birds came from Tunisia, Algeria and Morocco. I also examined a few juvenile specimens of each population.

The following measurements were taken: flattened wing, tarsus and tail lengths according to Svensson (1975), upper mandible length from the

TABLE 1

Numbers of skins of Crossbills *Loxia curvirostra* examined arranged by month of year.

	MONTH												
	J	F	M	A	M	J	J	A	S	O	N	D	unknown
N-E (65)	2	5	5	2	8	7	1	5	6	3	4	12	5
F (42)	–	–	–	3	3	–	5	8	1	9	8	3	2
N-I (43)	3	6	–	–	3	–	2	4	4	11	3	7	4
CA (23)	3	2	3	–	–	–	4	2	5	–	1	3	–
SI (12)	2	2	–	–	3	2	–	–	–	1	–	2	–
N-A (70)	6	8	5	22	6	–	–	–	1	17	5	–	–
CO (8)	–	–	–	1	2	–	–	–	3	–	1	–	1
MA (25)	1	11	1	5	–	–	2	–	–	2	–	1	2
CY (35)	1	–	–	12	–	7	–	1	10	–	–	4	–

N-E=North Europe; F=France; N-I=North Italy; CA=Calabria; SI=Sicily; N-A=North Africa; CO=Corsica; MA=Mallorca; CY=Cyprus. In brackets the sample size (both sexes).

feathering to tip (bill length), and bill depth at the base. Because of the difficulties in taking accurate tail lengths from skins (cf. Eck 1981), I did not use this measurement for comparisons. The index of curvature of the bill was calculated for each bird by the method described by Knox (1976). This index gives a measure of the steepness of the curvature of the culmen.

The AMNH skins were examined for me by Renato Massa, some BMNH skins also by R. Massa and by Carlo Violani. Working together with Fabio Lo Valvo, the shade of colour on the rump and breast of males was measured using the Munsell method (Smithe 1975).

Finally I noted the extent of primary moult and the general condition of the plumage (worn/abraded), following Ginn & Melville's (1983) method. Depending on the state of growth of each new primary, the primary moult score ranges from 1 to 5, i.e. from earliest to final development; hence the maximum score for 9 primaries at the end of the moult is 45.

I considered that the specimens examined were nearly all adults. According to Tordoff (1952) and Herremans (1982), the unworn secondary coverts of immature birds are white-tipped and the tail feathers are pointed and worn, whereas those of adults are rounded; but both authors agree on the difficulty of separating some immature birds from adults.

Table 1 lists the numbers of skins examined arranged by month of year. Appendix 1 summarises the distribution of Crossbills in the Mediterranean area.

RESULTS

Biometrics of the Mediterranean Crossbills

The biometrics of the Crossbills examined are given in Table 2 and Fig. 1 compares the data for different pairs of adjacent populations. My results from North Europe, North Africa and Cyprus are very similar to those published by Knox (1976), particularly for the index of curvature (with the exception of Cyprus females). The wing lengths of Cyprus males are rather different; Knox (1976) gives 97.5 mm for 15 birds against 95.9 mm for my 22 birds. The measurements made from live individuals caught in Belgium during the 1979 irruption, probably coming from a North European

TABLE 2

Biometrics (mm) of Crossbills *Loxia curvirostra*.

	MALES						FEMALES				
	b-l	b-d	t-l	w-l	i.c. (–400)		b-l	b-d	t-l	w-l	i.c. (–400)
North Europe	19.04	11.34	17.35	97.7	42.5*	**North Europe**	18.82	11.0	16.79	95.2	46.2*
n=35	0.95	0.49	0.8	2.4	13.9	n=30	0.7	0.4	0.8	2.1	12.4
	(17.2–20.4)	(10.8–12.8)	(15.8–19.7)	(95.0–103.5)	(8–74)		(17.0–19.7)	(9.8–12.3)	(15.0–19.6)	(90.1–98.0)	(22–68)
France	18.04	11.69	18.07	95.86	–	**France**	17.17	11.4	16.78	93.35	–
n=28	0.94	0.46	0.76	2.34	–	n=14	0.86	0.3	0.8	2.1	–
	(16.3–19.8)	(11.0–12.5)	(16.6–19.3)	(91.3–101.0)	–		(16.0–18.6)	(11.0–12.2)	(15.6–19.0)	(90.3–96.5)	–
North Italy	19.66	11.51	17.92	96.33	43.7	**North Italy**	19.09	11.29	17.52	92.13	45.14
n=25	0.89	0.37	1.24	2.28	19.3	n=18	1.0	0.64	1.17	3.07	18.1
	(18.3–21.0)	(10.7–12.1)	(16.9–21.6)	(90.0–99.7)	(26–87)		(17.6–20.8)	(10.0–12.2)	(16.0–19.8)	(85.7–96.6)	(28–91)
Calabria	19.5	11.65	18.07	96.68	54.7	**Calabria**	19.87	11.24	17.8	94.43	–
n=19	1.2	0.61	0.81	2.23	18.3	n=4	0.89	0.51	0.61	1.61	–
	(17.6–22.6)	(10.5–12.6)	(16.0–19.6)	(91.9–100.0)	(22–90)		(18.8–21.0)	(10.7–11.9)	(17.1–18.4)	(92.1–95.7)	(35–50)
Sicily	19.78	11.73	17.79	95.83	52.7	**Sicily**	19.95	11.17	17.97	92.14	–
n=8	1.1	0.6	0.8	2.0	9.1	n=4	0.8	0.5	0.6	1.5	–
	(18.5–21.0)	(11.2–12.1)	(16.9–19.0)	(92.0–97.4)	(37–70)		(19.2–20.4)	(10.7–11.9)	(16.8–18.6)	(89.7–93.4)	(18–53)
North Africa	19.22	11.71	17.61	95.86	68.8	**North Africa**	18.43	11.29	17.25	94.0	63.5
n=41	1.07	0.63	1.4	2.68	22.8	n=29	1.17	0.55	1.04	2.6	18.9
	(17.5–22.3)	(10.6–12.7)	(15.0–21.0)	(89.0–103.0)	(30–105)		(15.0–19.9)	(9.5–12.4)	(15.0–19.0)	(87.0–98.6)	(34–100)
Corsica	18.94	11.68	17.69	96.46	–	**Corsica**	18.98	11.53	16.34	91.63	–
n=5	1.27	0.54	0.83	1.84	–	n=3	0.71	0.33	0.98	3.04	–
	(17.4–20.6)	(11.0–12.5)	(16.7–19.1)	(93.0–98.0)	(45–50)		(18.1–19.8)	(11.3–12.0)	(15.0–17.3)	(89.0–95.9)	(30–50)
Mallorca	17.82	11.22	17.37	91.31	55.7	**Mallorca**	17.67	11.05	17.29	90.74	50.3
n=17	0.79	0.5	0.87	2.87	15.9	n=8	0.44	0.58	0.86	1.19	18.0
	(16.4–19.6)	(10.2–12.2)	(15.9–19.0)	(86.0–95.0)	(35–85)		(16.8–18.3)	(10.3–12.2)	(16.1–18.5)	(88.4–92.0)	(25–77)
Cyprus	20.27	12.27	18.48	95.95	76.7	**Cyprus**	18.8	11.87	18.95	92.57	82.2
n=22	0.87	0.57	1.42	2.27	18.0	n=13	1.6	0.75	0.97	2.38	10.5
	(18.7–21.9)	(11.6–13.3)	(15.9–21.0)	(92.0–101)	(60–108)		(14.9–21.5)	(10.8–13.0)	(18.0–21.0)	(89.0–97.3)	(70–99)

Mean, standard deviation and range of variation (in brackets). *=from Knox (1976). b-l=bill length; b-d=bill depth; t-l=tarsus length; w-l=wing length; i.c. (–400)=index of bill curvature according to Knox's (1976) method. n is the sample size for all the parameters, excluding i.c. for N-A, CO and MA, which are respectively 21, 2 and 9 in males and for N-A and CY in females are 13 and 6 respectively.

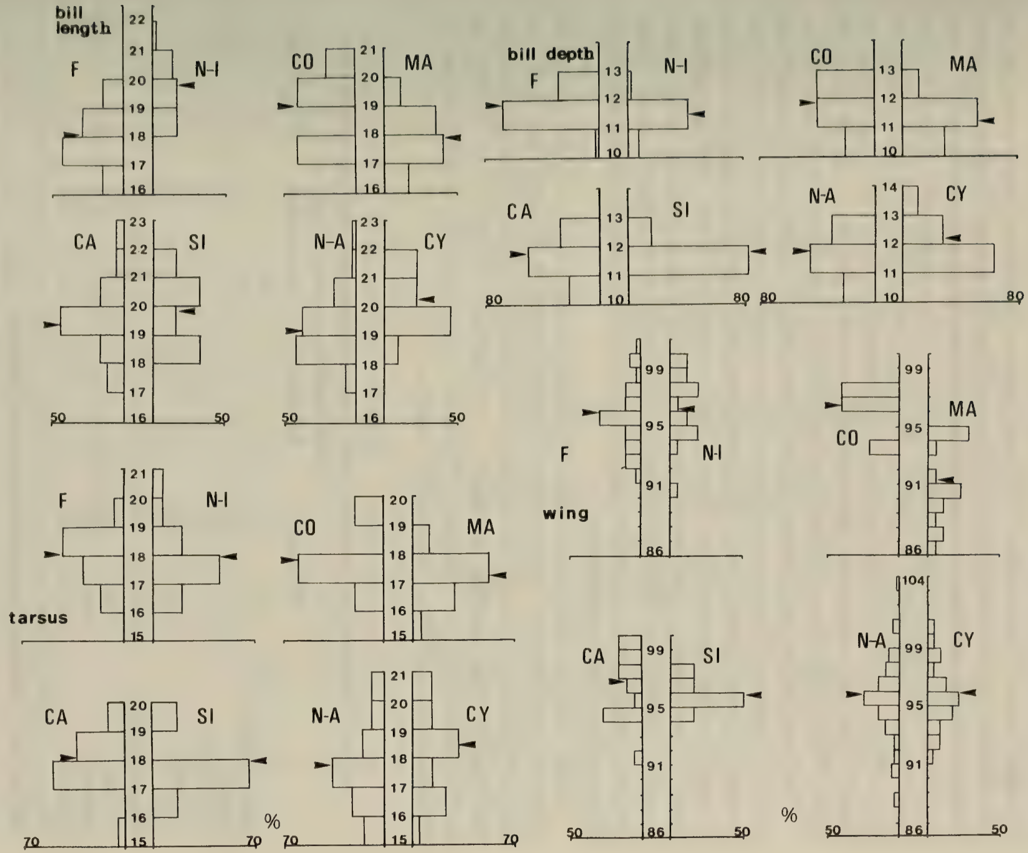

Figure 1. Bill length and depth, tarsus length and wing length of adjacent geographical populations of male Crossbills *Loxia curvirostra* expressed as a percentage per 1 mm of total measured (mm). The arrow shows the average value (see also Table 2).
F=France;
N-I=North Italy;
CO=Corsica;
MA=Mallorca;
CA=Calabria;
SI=Sicily;
N-A=North Africa;
CY=Cyprus.

breeding area (Herremans 1982), are greater than mine (male wing length 100.29 mm, females 97.36 mm). There is usually some difference between biometrics taken from live specimens and from skins (Svensson 1975), but this would fail to account for a difference of this magnitude. There is clinal variation of wing length from east to west across Russia (Vaurie 1956, *in* Knox 1975). We probably examined different samples of this variation. My North Europe values, on the contrary, are very similar to those taken by Eck (1981) from skins (male wing length 97.03 mm, females 94.72 mm).

The smallest individuals examined came from Mallorca, the largest from North Europe. The greatest index of curvature came from Cyprus and North African specimens. The measurements from the Calabro-Sicilian population fell between the North Italian and the North African populations. The French specimens show unusual characteristics; they were caught during the 1929-30 irruption and represent a population whose origin is unknown, since the sample appeared different from that of North Europe for all the parameters.

Wing length decreases, while bill length and index of bill curvature increase southwards. Regressions of wing length, bill length and index of bill curvature at different latitudes are significant (French specimens were excluded): wing length-latitude: $y = 0.083x + 92.22$; $P = 0.024$; bill length-latitude: $y = -0.013x + 19.85$; $P = 0.024$; index of bill curvature-latitude: $y = -0.854x + 92.75$; $P = 0.025$.

TABLE 3

Percent difference of biometrics of some Crossbill *Loxia curvirostra* populations from North Europe.

	Bill length		Bill depth		Tarsus length		Wing length	
	m	f	m	f	m	f	m	f
Great Britain*	–0.7	–2.8	0.5	0	–	–	–0.9	2.9
France	–7.3	–8.8	3.1	3.7	4.1	–0.1	–1.9	0.9
North-Italy	3.2	1.4	1.5	2.6	3.3	4.3	–1.5	–0.4
Calabria	2.4	5.6	2.7	2.1	4.1	6.0	–1.1	2.1
Sicily	2.6	6.0	2.7	1.5	0.6	7.0	–2.2	–1.5
North-Africa	0.9	–2.1	3.3	2.6	1.5	2.7	–1.9	1.7
Corsica	–0.6	0.8	3.0	4.8	1.9	–2.7	–1.3	–0.1
Mallorca	–6.5	–6.2	–1.1	0.4	0.1	3.0	–6.6	–2.0
Cyprus	6.5	–0.2	8.2	7.9	6.5	12.9	–2.1	0.1

m=males; f=females; *=from measurements of Marquiss (1980)

Table 3 shows the percentage difference of each population compared to the North European specimens. All the Mediterranean populations, apart from that of Mallorca, have more curved and deeper bills and longer tarsi than the North European ones. I found a significant correlation between bill length and depth in all the populations ($r_9 = 0.65$; $P < 0.05$).

Table 4 shows the significant differences obtained by student t-test between the biometric parameters of pairs of populations (see also Fig. 1). Since the female sample was too small, I compared only biometrics of males. The Table shows a significant difference between many pairs of populations, particularly for some parameters such as the bill length and the index of curvature. Samples from Cyprus and Mallorca were

TABLE 4

Statistical levels of probability of the biometric parameters of pairs of populations assessed by Student t-test in samples of Crossbills *Loxia curvirostra* examined.

	F	N.I.	CA	SI	N.A.	CO	MA	CY
b.l.	.001	.02	N.S.	N.S.	N.S.	N.S.	.001	.001
b.d.	.01	N.S.	N.S.	N.S.	.01	N.S.	N.S.	.001
t.l.	.001	.05	.01	N.S.	N.S.	N.S.	N.S.	.001
w.l.	.01	.05	N.S.	.05	.01	N.S.	.001	.01
i.c.	–	N.S.	.001	.05	.001	–	.01	.001
b.l.		.001	.001	.001	.001	N.S.	N.S.	.001
b.d.		N.S.	N.S.	N.S.	N.S.	N.S.	.01	.001
t.l.		N.S.	N.S.	N.S.	N.S.	N.S.	.01	N.S.
w.l.		N.S.	N.S.	N.S.	N.S.	N.S.	.001	N.S.
b.l.			N.S.	N.S.	.001	N.S.	N.S.	.05
b.d.			N.S.	N.S.	N.S.	N.S.	.05	.001
t.l.			N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
w.l.			N.S.	N.S.	N.S.	N.S.	.001	N.S.
i.c.			N.S.	N.S.	.001	–	N.S.	.001
b.l.				N.S.	N.S.	N.S.	.001	.05
b.d.				N.S.	N.S.	N.S.	.02	.01
t.l.				N.S.	N.S.	N.S.	.02	N.S.
w.l.				N.S.	N.S.	N.S.	.001	N.S.
i.c.				N.S.	.05	–	N.S.	.01
b.l.					N.S.	N.S.	.001	N.S.
b.d.					N.S.	N.S.	.05	.05
t.l.					N.S.	N.S.	N.S.	N.S.
w.l.					N.S.	N.S.	.001	N.S.
i.c.					N.S.	–	N.S.	.01
b.l.						N.S.	.001	.001
b.d.						N.S.	.01	.001
t.l.						N.S.	N.S.	.02
w.l.						N.S.	.001	N.S.
i.c.						–	N.S.	N.S.
b.l.							.05	.01
b.d.							.01	.05
t.l.							N.S.	N.S.
w.l.							.001	N.S.
b.l.								.001
b.d.								.001
t.l.								.01
w.l.								.001
i.c.								.02

Abbreviations as in Table 2. N.S.=Not significant. (See Table 2 for abbreviations.)

statistically different from other samples for 3 parameters of the 5 analysed. Inexplicably, the French sample appeared different from that of North Europe for all the parameters.

Finally I found a small sexual dimorphism in all the biometrics of each population. Males were larger than females by a ratio of 1.02 to 1.

The colour of the Mediterranean Crossbills

According to some authors (Griscom 1937, Bannerman & Bannerman 1958, Thibault 1983), the males of Mediterranean Crossbills are less red and the females less green than North European ones, but no direct measurements have been made previously. We found 23 different shades of yellow, orange and red in the males (5 shades of yellow: numbers 153, 57, 53, 56 and 52 in the tables of Smithe (1975); 6 of orange: numbers 6, 18, 132D, 132C, 17 and 16; and 12 of red: numbers 10, 94, 15, 13, 14, 210, 12, 11,

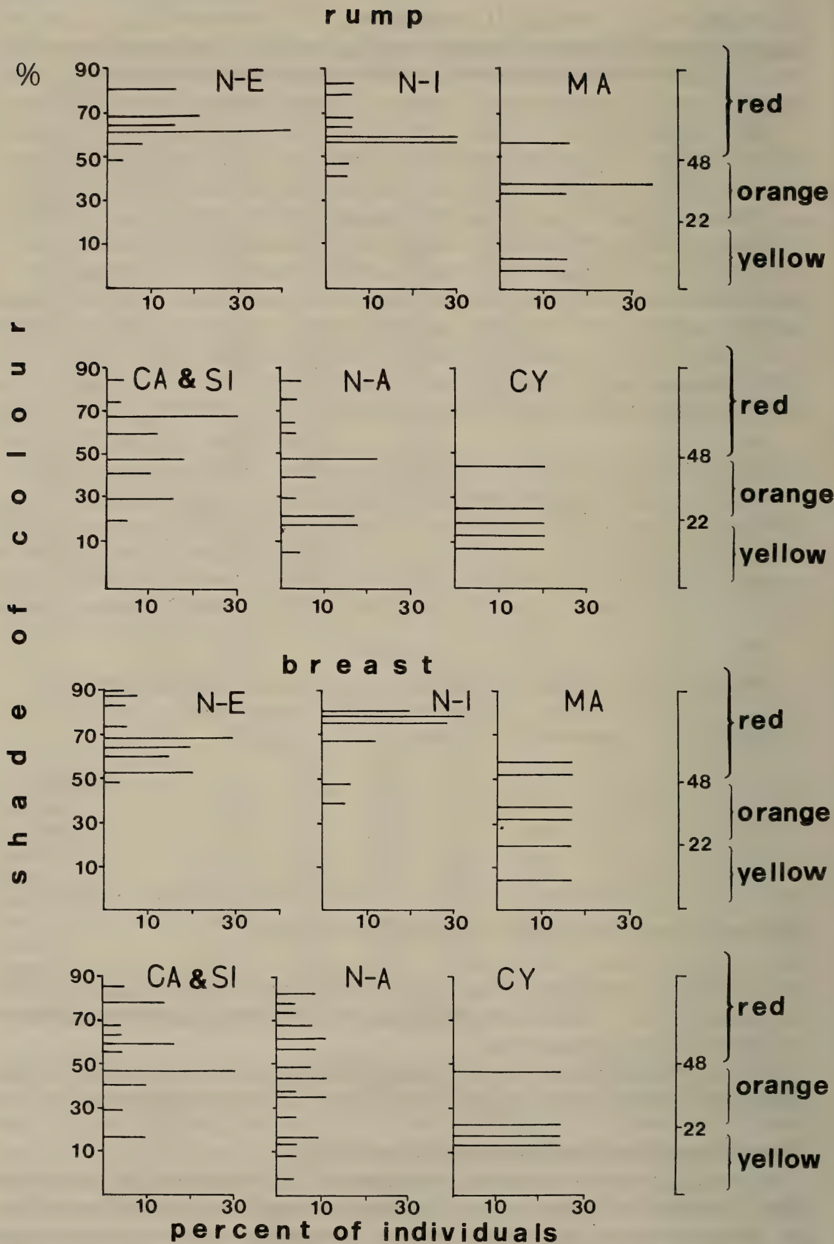

Figure 2. Percent average values of breast and rump colour of male Crossbills *Loxia curvirostra* ranged into shades of yellow (between 0 and 22%), orange (between 22 and 48%) and red (more than 48%).

108A, 108, 8 and 7). I calculated the percent values of these colours, e.g. colour 18, which is seventh between yellow and red, represents 7/23 x 100 = 30.4%. Fig. 2 shows the results. Shades of yellow fell between 0 and 22%, shades of orange between 22 and 48%, and red was more than 48%.

To examine the effect of wear, I compared the colour of North African samples from April and October, but found no significant difference (av. = 33.3 and 32.9%). There is clinal variation in the shade of plumage colour; males with reddish plumage are more common in North Europe, whereas in the Mediterranean area yellowish individuals are more frequent. Table 5 shows the percent average values (± s.d.) of colours for the breast and rump. Regression of the average colour values at different latitudes is significant for the breast and rump ($y = 1.072x + 0.546$; $P = 0.025$). In the analysis, birds from Calabria and Sicily were grouped together. The small sample from Corsica was not analysed. The Mallorca and Cyprus populations were less intensely coloured than others at the same latitude, perhaps due to isolation.

TABLE 5

Percent average (±s.d.) of shade of colours between yellow and red in the breast and rump of the examined skins of Crossbills *Loxia curvirostra* – see text. (See Table 2 for abbreviations.)

	N-E	N-I	MA	CA & SI	N-A	CY
BREAST	66.14 ± 10.7	65.0 ± 10.2	44.0 ± 20.4	54.13 ± 18.4	46.4 ± 23.0	25.0 ± 15.8
RUMP	65.3 ± 6.6	63.7 ± 8.4	38.3 ± 23.0	53.2 ± 17.9	41.1 ± 22.8	20.8 ± 13.3

Breeding and moult

Although many individuals moult between July and November (see e.g. Tordoff 1952, Ginn & Melville 1983, Busse 1984), at least some North European populations moult irregularly. Herremans (1982) found adults with complete, active and suspended moult during the 1979-80 irruption in Belgium, between September and October. However, it seems that breeding cycles of Mediterranean Crossbills are less irregular. Nesting begins in winter or early spring and lasts until early summer. Some breeding throughout the rest of the year is known, but it is not common (e.g. Heim de Balsac & Mayaud 1962, Flint & Stewart 1983, Thibault 1983).

Based on the skins that I examined, breeding begins in winter (juveniles from January), with a peak in February and March. It seems that the breeding cycle is quite regular, perhaps due to the regular availability of food in the Mediterranean pine woods. According to Eck (1981), there is no evidence that the Mediterranean Crossbills are sedentary, but in my opinion it seems quite likely. The North African populations are also believed to be sedentary (M. Thévenot).

The breeding cycle ends between April and May, by which time the adults show abraded plumage. Crossbills then moult regularly between May and September. I did not find any suspended moult during this period. The state of moult of the specimens examined according to Ginn & Melville's (1983) method was as follows:–

Mallorca. The only 2 summer specimens examined (July) had primary

scores of 19 and 33. Two specimens from October were in fresh plumage.

Corsica. September skins were in fresh plumage.

Calabria. Four July skins: primary scores of c. 20; one from August had completed its moult, another had a score of 40. Five specimens from September: one with a completed moult, the others with scores of 39, 42, 44 and 44 (completed moult). I found fresh plumage on all specimens caught between November and March.

Sicily. Three specimens from May were just starting moult (scores: 8, 10 and 12); two in June scored 20 and 23; one in October and 2 in December were in fresh plumage.

North Africa. The autumn skins were all in fresh plumage, with no trace of moult. I did not examine any summer skins, but it seems likely that birds moult between June and September, in common with the other populations considered in this study.

Cyprus. I found scores between 23 and 31 in the June skins. Specimens caught in August and September had almost completed their moult (scores between 38 and 42).

DISCUSSION

Bergmann's and Allen's rules

In order to understand more fully the problems of Crossbill taxonomy, a detailed examination of variation along 2 other Mediterranean peninsulas, Iberia and the Balkans, and along the Maghreb, from Tunisia to Morocco, will be necessary.

Phillips (1977) thinks that Crossbills violate all the ecological rules, including Bergmann's; but according to Griscom (1937) the decrease of Crossbill body size southwards does not occur in the New World (Phillips's poulations), but does so in the Palaearctic.

Many researchers use wing-length as a measure of body size for Bergmann's rule and bill-length for Allen's. Northern populations generally have longer wings than any of the Mediterranean ones and the wing-lengths of *scotica* and *pytyopsittacus* conform with this (Knox 1976), thereby observing Bergmann's rule. It could be that *balearica* and *guillemardi* have shorter wings due to the effect of insularity. However, large southern populations (e.g. in North Africa) also have shorter winglengths. Hence my figures support Griscom (1937) that in the Palaearctic the body size of Crossbills decreases southwards.

Turning now to Allen's rule, the bills of Mediterranean Crossbill populations are longer and larger than those of northern ones. Significant regressions of bill length and index of curvature at different latitudes suggest that Crossbills do not violate Allen's rule.

Adkisson (1977) also found similar clinal variation of wing and bill lengths in a related species, the Pine Grosbeak *Pinicola enucleator,* in North America.

Adaptive character

Crossbills with a slender bill feed on several conifer species, whereas those with a strong bill feed only on pines (see Appendix 1). Pine cones are

larger than cones of other conifers and the bill size and strength of a Crossbill should be a good indication of its power.

I measured the length of the cone scales of *Pinus nigra* from Cyprus and Calabria, *P. laricio* from Sicily and *P. halepensis* from Tunisia and Mallorca and I found respectively the following values: 27.3 mm ± 1.5 (n=40), 21.5 ± 3.6 (n=23), 22 ± 1.5 (n=56), 23.02 ± 2.5 (n=27) and 23.08 ± 3 (n=27). They correlated with the index of curvature for the respective populations (for the males $r_5 = 0.86$; $P < 0.05$). This correlation agrees with the hypothesis that the bill size is an adaptive character for feeding on pine cones. If so, the clinal variation of bill according to Allen's rule, could be casual.

Gene flow

Clinal variation in size and colour in Crossbills is an indication of gene flow between populations, brought about by irruptions from northern Europe. Speciation frequently takes place following geographic differentiation, interpreted as genetic change in response to environmental variations. In these instances, the peripheral populations show a greater disposition to speciation (Mayr 1963). In fact we find the most differentiated forms are in the north (*scotica* and *pytyopsittacus*), and in the south (the Mediterranean populations). Possibly the rate of speciation has been accelerated by the development of sedentary populations.

I agree with Eck's (1981) hypothesis of a centrifugal spread from the central European populations northwards and southwards, producing forms with strong bills. These forms probably became sedentary. We know of only a few irruptions by *pytyopsittacus* (Catley & Hursthouse 1985), and none by Mediterranean forms. The variation of Mediterranean populations may be the result of different immigrations from different European populations, whose range of variation is wide (Griscom 1937).

To judge from the morphological variation seen in Crossbills (Tables 2-6), there may still be gene flow between central-northern and Mediterranean populations, though for some populations it may be scarce or even absent. I think, for instance, the process of speciation is advanced in the populations in Cyprus, Mallorca and North Africa, but less so in Calabria, Sicily and Corsica. Whereas for the former 3 countries trinomial distinction is useful, for the latter 3 it is meaningless.

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Appendix I. Crossbills *Loxia curvirostra* in the Mediterranean area.

In the Balkan peninsula the Crossbill (*L.c. mariae*) lives in pine woods (*Pinus silvestris* and *P. nigra*) (Matveiev 1976; G. Handrinos). In Cyprus also *L.c. guillemardi* lives in woods of *P. nigra* above c. 1500 m (Flint & Stewart 1983). In Crete breeding was confirmed recently at the Naturel Reserve of Samaria, in *P. nigra* and *Cupressus sempervirens* (Massa 1984). In Sicily breeding was confirmed by Priolo & Sarà (1981), in woods of *P. laricio* on Mt Etna, where it appears to be sedentary (pers. obs.). In the Italian peninsula the Crossbill lives in woods of *P. nigra* in Sila and Aspromonte (Calabria) (Di Carlo 1961, 1962; Moltoni 1964; M. Lo Valvo, Mingozzi, Pazzuconi, Sarà, pers. comm.), in Abruzzi (Di Carlo 1972) and Umbria (Castiglia & Tabarrini 1980), In the Alps, according to P. Brichetti it prefers *Picea excelsa*, often associated with woods of *Abies alba, Pinus sylvestris, P. cembra* and *P. uncinata*. Flocks of Crossbills annually cross the sub-alpine areas during late August and early September, but the source and direction of those movements are unknown (V. Vigorita). In Italy, the Crossbill lives at 1000–2100 m, but instances of breeding at sea level, though unusual, are known (nearly independent newly-fledged chicks at Porto Ercole, Grosseto, 15 August 1930 – label on 2 specimens of Museo La Specola of Florence written by N. Beccari: N. Baccetti); a pair with just fledged chicks among the pines near Laghi Alimini, Lecce, 1 October 1983: F. Petretti).

The Corsican population of Crossbills (*L.c. corsicana*) lives in woods of *P. laricio*, whereas the north African populations (*L.c. poliogyna*) live in *P. halepensis* in inland areas of Tunisia, Algeria and Morocco (Heim de Balsac & Mayaud 1962), where it seems to be sedentary (M. Thévenot). The Mallorca population (*L.c. balearica*) also lives in *P. halepensis* from sea level (J. Muntaner).

All these forms are accepted by Vaurie (1959: 649–651), who regards *hispana* of Spain as a synonym of nominate *curvirostra*. According to Carlos Senar & Borràs (1984) the Crossbill in Catalunia and Andorra lives on *P. nigra, P. halepensis, P. sylvestris, P. uncinata* and on *Abies alba*.

In France some mountain populations live only in woods of *P. sylvestris* and *P. uncinata*; Lescourret & Genard (1983) think they are true isolated populations with minor yearly fluctuations. According to Yeatman (1976) the Crossbill in France feeds on *Picea excelsa*. According to Schifferli *et al.* (1980), in Switzerland it also lives both on *P. excelsa* and mixed coniferous woods.

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Extensions of range of some Bolivian birds

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This report documents range extensions of birds in Bolivia on a departmental basis and generally follows the format used by Remsen *et al.* (1985). The nomenclature used follows Remsen & Traylor (in press). Departamentos referred to in this paper are abbreviated throughout as follows: Beni (**BE:**), Chuquisaca (**CH:**), Cochabamba (**CO:**), Oruro (**OR:**), and Santa Cruz (**SC:**). Previously published records for Bolivian Departamentos are taken from Remsen & Traylor (in press). Names of provinces used here are taken from the Atlas Censal de Bolivia (1982).

These records are from observations and collections made in Bolivia during 1984 and one record during 1978 and '79. Site A was in Prov.

Sajama, Laguna, Puesto Militar de Lagunas at 4100 m; Site B was in Prov. Gral. Ballivan, Serrania Pilon, 27 km by road N Rio Quiquibey on road to San Borja, at 1025 m. All specimens are housed at Louisiana State University Museum of Zoology (LSUMZ). Capitalized colour names used to describe soft parts of specimens are from Smithe (1975, 1981). Other non-capitalized names of colours used are our own descriptions that were used when reasonably good colour matches could not be found from those in Smithe. Included in this report are the first specimen records for Bolivia for *Cathartes burrovianus* and the first Bolivian records of *Donacospiza albifrons*.

LIST OF SPECIES

PUNA TINAMOU *Tinamotis pentlandii*

OR: Prov. Sajama, 43 km by road SW Curahurra de Sajama, 4025 m, 9 December 1984 (specimens: LSUMZ 123408-09, 125632). Sight records as follows: 28.9 km by road E Curahurra de Sajama, 3850 m, 2 on 2 Dec 1984 in a cleared field along an arroyo (a small canyon with only intermittent or no water) with shrub covered hillsides with approximately 30% bare ground; 10 km by road E Sajama, 4300 m, a flock of 9 on 9 Dec 1984 on a gently sloping hillside with scattered 3-4 m tall *Polylepis tomentella*, cushion plants (*Azorella* sp.) and scattered bunch grasses.

ANDEAN FLAMINGO *Phoenicoparrus andinus*

OR: 5-20 seen, at Site A in a small lake 5-8 Dec 1984.

ANDEAN GOOSE *Chloephaga melanoptera*

OR: Sight records:– Prov. Sajama, 19 km by road SW Curahurra de Sajama along Rio Pichaca valley, c. 3860 m, 7 on 2 Dec 1984 and 8 on 20 Dec 1984 in the matted growth of *Lysipomia*, *Distichia muscoides*, and *Verbena minima* which grows in the wet areas adjacent to Rio Pichaca and other similar areas in this vicinity; 6 km NE Laguna, foothills of Nevado Sajama, 4200 m, 3 grazing in matted vegetation near a small stream, 4 Dec 1984; Site A, 2 on 5 Dec and 1 on 6 Dec 1984.

RINGED TEAL *Callonetta leucophrys*

BE: Prov. Moxos, 38 km by road W Trinidad, 175 m, 2 on 18 Oct 1984 in a small impoundment of water near a road.

CINNAMON TEAL *Anas cyanoptera*

OR: At a small lake at Site A, one on 2 Dec, 2 on 5 Dec and 1 on 6 Dec, all 1984.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 1 male, 7 Oct 1984 (specimen LSUMZ 123438); left testis 10 x 12 mm, right testis 7 x 10 mm, reddish in colour; light fat; wt. 1200 g; bill whitish horn; tarsi and knee joints Buff becoming darker toward toes; toes Blackish Neutral Gray; bottoms of feet Medium Neutral Gray, a whitish, chalky substance on and between scales; irides Brick Red; head, throat and chin Buff Yellow; cheeks, auricular area and lores Orange Yellow; forecrown Cream Color; crown and nape Cream Color with bluish grey mottling; bluish grey mottling on sides of throat and on the Orange Yellow portion of the head; skull 100% ossified; stomach and crop full of greyish foul-smelling, paste-like carrion; light moult on neck area. We found this species to be common throughout this general area of the Bolivian lowlands. Remsen & Ridgely (1980) and Schmitt *et al.* (in press) list sight records of this species for Bolivia; but this is the first specimen obtained there.

RED-THROATED CARACARA *Daptrius americanus*

BE: Prov. Gral. Ballivan, 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 3 on 27 Sep 1984 and 1 on 28 Sep 1984.

GIANT COOT *Fulica gigantea*

OR: At Site A, 3 on 5 Dec, 1 on 6 Dec and 3 on 7 Dec, all 1984.

RED-LEGGED SERIEMA *Cariama cristata*

TA: Prov. Gran Chaco; 10 km SE Tiguipa, 555 m, 4 on 28 May 1979; **CH:** Prov. Luis Calvo; Camatindi, 3 on 11 May 1979. (See also Schmitt & Cole 1981).

GREATER YELLOWLEGS *Tringa melanoleuca*

OR: At Site A, one on 5 Dec 1984 (specimen LSUMZ 123468).

VIOLACEOUS QUAIL-DOVE *Geotrygon violacea*
BE: At Site B, 15 Sep 1984 (specimen LSUMZ 123494).

GOLDEN-COLLARED MACAW *Ara auricollis*
CH: Prov. Hernando Siles; c. 16 km by road E Monteagudo, a flock of 12 on 26 Apr 1984.

WHITE-COLLARED SWIFT *Streptoprocne zonaris*
CH: Prov. Yamparez; 4 km by road NE Tarabuco, 15-20 seen near a cliff, 27 Apr 1984.

SPARKLING VIOLETEAR *Colibri coruscans*
BE: At Site B, 23 and 24 Sep 1984 (specimens LSUMZ 123613-14).

GREEN-TAILED TRAINBEARER *Lesbia nuna*
CO: Prov. Carrasco; 6.6 km by road NW Lopez Mendoza, at km 98 from Cochabamba, Quebrado Majon, 3150 m. One male seen, 19 Aug 1984, feeding on flowering *Eucalyptus* sp. and a male and female on 20 Aug 1984.

GOULD'S JEWELFRONT *Polyplancta aurescens*
BE: At Site B, 14 and 22 Sep 1984 (specimens LSUMZ 123672-73). Recently recorded for Bolivia for the first time by Schuchman (1984).

LONG-BILLED STARTHROAT *Heliomaster longirostris*
BE: Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 24 and 28 Sep 1984 (specimens LSUMZ 123053, 123688).

BROAD-BILLED MOTMOT *Electron platyrhynchum*
BE: Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 28 Sep 1984 (specimen LSUMZ 123700).

EMERALD TOUCANET *Aulacorhynchus prasinus*
BE: At Site B, 19 and 21 Sep 1984 (specimens LSUMZ 123728-30).

CHESTNUT-TIPPED TOUCANET *Aulacorhynchus derbianus*
BE: At Site B, 12 and 21 Sep 1984 (specimens LSUMZ 123731-32).

GOLDEN-GREEN WOODPECKER *Piculus chrysochloros*
BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 27 Oct 1984 (specimen LSUMZ 125774).

OCELLATED WOODCREEPER *Xiphorhynchus ocellatus*
BE: At Site B, 13 specimens, 13-20 Sep 1984 (LSUMZ 123043, 123875-82, 125787-90).

SCALE-THROATED EARTHCREEPER *Upucerthia dumetaria*
CH: Prov. Nor Cinti, 38 km by road S Padacoyo, 3275 m, 13 Nov 1984 (specimen LSUMZ 123077).

PLAIN SOFTTAIL *Thripophaga fusciceps*
BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 26-30 Oct 1984 (specimens LSUMZ 124062-65).

STRIPED WOODHAUNTER *Hyloctistes subulatus*
BE: At Site B, 22 Sep 1984 (specimen LSUMZ 124082). Recently recorded for the first time for Bolivia by Schulenberg & Remsen (1982).

GREY-THROATED LEAFSCRAPER *Sclerurus albigularis*
BE: At Site B, collected on 15, 20, and 22 Sep 1984 (LSUMZ 123044-45, 124095).

TAWNY-THROATED LEAFSCRAPER *Sclerurus mexicanus*
BE: At Site B, 13 and 14 Sep 1984 (specimens LSUMZ 124096-97).

HAIRY-CRESTED ANTBIRD *Rhegmatorhina melanosticta*
BE: At Site B, 13 and 18 Sep 1984 (specimens LSUMZ 124219-21).

BLACK-SPOTTED BARE-EYE *Phlegopsis nigromaculata*
SC: Prov. Ichilo: 7 km N, 17 km W Buena Vista, km 119 on the road to Yapacani, Propiedad Nuveo Mundo, 353 m, one netted, 26 Dec 1978 but not collected. This is the southernmost known locality of this Amazonian species (J. V. Remsen).

SHARP-TAILED TYRANT *Culicivora caudacuta*
BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 6 Oct 1984 (specimen LSUMZ 124493). Only the second record for Bolivia (Remsen & Traylor, in press, per J. V. Remsen). Collected from a group of 3 perched on the inflorescences of 1-1.5 m tall grass in a shallow (0.5 m) depression (c. 5 x 10 m) in an open grassland area. Extremely wary and seen only once.

SUBTROPICAL DORADITO *Pseudocolopterix acutipennis*

BE: Prov. Moxos, 38 km by road W Trinidad, 175 m, 19-21 Oct 1984 (specimens LSUMZ 124489-92, 125911).

SLATY-CAPPED FLYCATCHER *Leptopogon superciliaris*

BE: At Site B, 17 Sep 1984 (specimen LSUMZ 124657).

SPECTACLED BRISTLE-TYRANT *Phylloscartes orbitalis*

BE: At Site B, 12 and 22 Sep 1984 (specimens LSUMZ 124481-83).

BUFF-THROATED TODY-TYRANT *Hemitriccus rufigularis*

BE: At Site B, 20 Sep 1984 (specimen LSUMZ 124461).

WHITE-THROATED SPADEBILL *Platyrinchus mystaceus*

BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 30 Oct 1984 (specimen LSUMZ 124441). The first record from the lowlands of Bolivia; it is not the ochraceous-bellied *P.m. partridgei,* the subspecies of the foothills of Bolivia, but a yellow-bellied individual, either an atypical *P.m. bifasciatus* or an undescribed subspecies (J. V. Remsen).

BLACK PHOEBE *Sayornis nigricans*

BE: At Site B, 1-3 daily, 11-23 Sep 1984.

BLACK-BELLIED SHRIKE-TYRANT *Agriornis montana*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8 Dec 1984 (specimen LSUMZ 124280).

PUNA GROUND-TYRANT *Muscisaxicola juninensis*

OR: At Site A, 5 Dec 1984 (specimens LSUMZ 124286-88).

OCHRE-NAPED GROUND-TYRANT *Muscisaxicola flavinucha*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8 Dec 1984 (specimen LSUMZ 124289).

BLUE-CROWNED MANAKIN *Pipra coronata*

BE: At Site B, 17 Sep 1984 (specimen LSUMZ 124270). Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 30 Sep 1984 (specimen LSUMZ 124269).

BARN SWALLOW *Hirundo rustica*

OR: At Site A, 7 seen flying over small lake, 5 Dec 1984.

SLATY THRUSH *Turdus nigriceps*

BE: At Site B, 13 and 17 Sep 1984 (specimens LSUMZ 124745-46, 125964).

RED-BACKED SIERRA-FINCH *Phrygilus dorsalis*

CH: Prov. Nor Cinti, 38 km by road S Padcaya, 375 m, 13 Nov 1984. In addition to this specimen, 7 others were observed here in stands of 0.5-1 m high shrubs and columnar cacti.

LONG-TAILED REED-FINCH *Donacospiza albifrons*

BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 8 Oct 1984 (specimens LSUMZ 124920-21); Prov. Moxos; 38 km by road W Trinidad, 175 m, 16-21 Oct 1984 (specimens LSUMZ 123069-70, 124922-26, 126016). Below are listed weights, colours of soft parts, reproductive conditions and stomach contents of the 10 specimens collected.

3 adult ♂♂ (skull 100% ossified): av. 18.9 g (18.1–19.6 g); irides Raw Umber; bill black to Blackish Neutral Gray; tarsi and toes Fuscous and Fawn Color; no fat; no body moult; left and right testis averaged 7.3 and 6 mm respectively; stomach contents contained insect parts.

3 immature ♂♂ (skulls ≤ 10% ossified): av. 17.1 g; irides Raw Umber; maxilla Fuscous to black; mandible Cream Color with Fuscous tomium, Light Neutral Gray and Pale Neutral Gray base with Fuscous tip; tarsi and toes Raw Umber, Fawn Color and Brownish Olive; no fat; none or light body moult; stomach contents contained insect parts and black beetles.

2 adult ♀♀ : av. 16.15 g; irides Raw Umber; 1 specimen had a black bill, another had maxilla black with Light Neutral Gray mandible; tarsi and toes Fawn Color; no fat; no body moult; ovaries averaged 6 x 4 mm, one had ova and oviduct < 1 mm, the other had ova and oviduct of 2 mm; stomach contents contained insect parts and parts of seeds.

2 unsexed and age unknown (specimens preserved in alcohol): av. 17.5 g; irides Raw Umber; bill black; tarsi and toes Fawn Color and Glaucous 97.

The 2 specimens collected on 8 Oct were taken from a group of 6 sitting in 1 m tall shrub in a generally open grassland area with small islands of scrub and forest nearby. No other Long-tailed Reed-finches were seen in the San Borja area. Our sight records of this species at 38 km by road W Trinidad are as follows: 14 (in groups of 2-6) on 16 Oct, 6 on 17 Oct, 3 on 18 Oct, 6 on 19 Oct and 2 on 20 Oct, all 1984. 2-6 individuals were seen perching or feeding on

1-1.5 m tall shrubs in open grassland areas with islands of forest and small patches of forest nearby. Often seen perched upright and also sometimes hanging head down while searching among small leaved shrubs for food items. 2-6 individuals were seen feeding in the same shrub for 1-3 minutes and then moving on to another shrub to continue feeding. Easily approached when feeding and not well concealed in the tall shrubs in the open grassland. No singing was heard nor any indication of territorial behaviour detected. The gonad data from the adult specimens suggest that they were near breeding condition.

These specimens represent the first records of this species from Bolivia. Based on the distribution map of this species in Short (1975), these localities are at least 900 km northwest of previously known localities in Brazil and Paraguay.

CARMIOL'S TANAGER *Chlorothraupis carmioli*

BE: At Site B, 12-23 Sep 1984 (specimens LSUMZ 123049-50, 125298-304, 126131-32).

YELLOW-CRESTED TANAGER *Tachyphonus rufiventer*

BE: At Site B, 17 Sep 1984 (specimen LSUMZ 125315).

FAWN-BREASTED TANAGER *Pipraeidea melanonota*

BE: At Site B, 21 Sep 1984 (specimen LSUMZ 125377).

BAY-HEADED TANAGER *Tangara gyrola*

BE: At Site B, 23-24 Sep 1984 (specimens LSUMZ 125400-01).

SLATE-THROATED REDSTART *Myioborus miniatus*

BE: At Site B, 13 Sep 1984 (specimen LSUMZ 125433).

TWO-BANDED WARBLER *Basileuterus bivittata*

BE: At Site B, 19 Sep 1984 (specimen LSUMZ 125437).

SLATY-CAPPED SHRIKEVIREO *Vireolanius leucotis*

BE: At Site B, 19 Sep 1984 (specimen LSUMZ 125495).

TAWNY-CROWNED GREENLET *Hylophilus ochraceiceps*

BE: At Site B, 12-13 Sep 1984 (specimens LSUMZ 125496-97).

THICK-BILLED SISKIN *Carduelis crassirostris*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8-9 Dec 1984 (specimens LSUMZ 123110, 125613-14, 126203-04). Sight records include flocks of up to 15 on 8 Dec 1984 and a group of 10 on 9 Dec 1984; seen perching in *Polylepis tomentella*, which in this particular area averaged 3-4 m in height. Our limited observations suggest that in this area *P. tomentella* is favoured for perching and for cover or both. Parker (1981) found that this species was characteristic of *Polylepis* woodlands in Peru.

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Observations on the occurrence and behaviour of the Crimson Fruitcrow *Haematoderus militaris* in Central Amazonia

by Richard O. Bierregaard, Jr, Douglas F. Stotz, Lee H. Harper and George V. N. Powell

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As is the case with many of the species that inhabit the canopy of tropical forests, the biology of the Crimson Fruitcrow *Haematoderus militaris* is so poorly known that any observations of the species in the wild significantly increase our understanding of its ecology and distribution. Snow (1982) states that the species is "virtually unknown in life". In the course of 5 years of ornithological field work in the Agricultural Development District some 50-75 km north of Manaus, Amazonas, Brazil, we have made the following observations of Crimson Fruitcrows.

The area in which the bird has been observed is still for the most part virgin forest on nutrient-poor yellow latosols, typical of the terra firma forests accompanying the major river courses throughout the Amazon Basin. Average canopy height is c. 35 m with emergents upwards of 45 m. The canopy is fairly continuous and regular in surface contour (for further description of the forest, see *Supl. Acta Amazonica* 12(3), 1982).

Most of our sightings of *H. militaris* have been made while conducting canopy surveys from a 42 m observation tower (Fig. 1) in the middle of virgin forest c. 50 km north of Manaus (see Bierregaard 1983). Additional observations were made from a 20 m high platform overlooking both virgin forest and deforested areas on the Fazenda Esteio, a cattle ranch being developed c. 65 km north of Manaus. Other observations have been made from the ground in the course of field work here and on 2 other nearby cattle ranches, Fazenda Dimona and Fazenda Porto Alegre.

Previously known only from the eastern Amazon Basin (Meyer de Schauensee 1970), the species seems to be fairly widely distributed throughout the Agricultural District as it has been reported in all the above

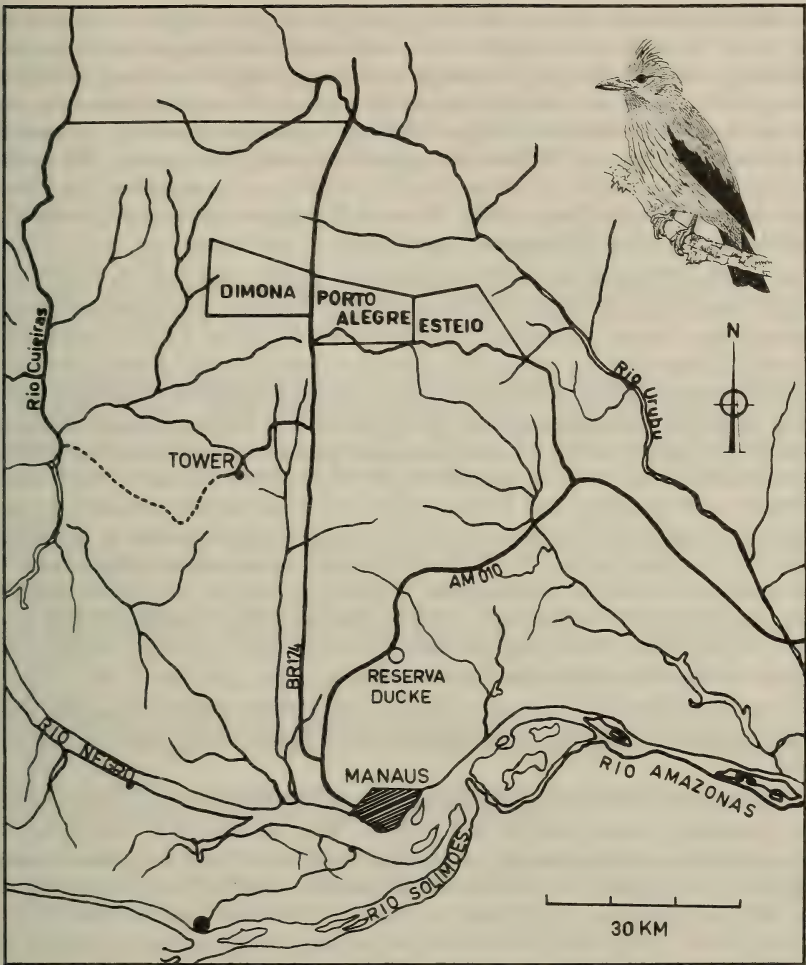

Figure 1. The study areas north of Manaus, Amazonas, Brazil (3°6′S, 60′W), where observations of the Crimson Fruitcrow *Haematoderis militaris* were made. The drawing of the fruitcrow has generously been provided by Martin Woodcock.

areas where the banding teams of the WWF/INPA project have worked. Although Willis (1977) did not report the species from Reserva Ducke, B. Magnusson saw one individual from a recently constructed meteorological tower extending above the canopy. Other avifaunal differences between the Agricultural District and Reserva Ducke have been noted by Stotz & Bierregaard (in prep.).

Following the first sighting in July 1979 (the Manaus distributional record in Snow 1982), the bird has been seen on c. 25% of our census days at the tower, where 2 emergent trees provided favourite perches, usually a shaded branch with a wide view of the surrounding canopy, on which the

bird would remain inactive for long periods. All but one observations at the tower have been of solitary birds and most have been of adult males. Sightings of birds foraging through the canopy elsewhere have included groups of 3-4. Active males remain at a perch for several minutes, on occasion calling repeatedly before moving to another perch up to several hundred metres away. When moving about around the tower, the birds will repeatedly return to a few specific perches, as do some of the other large male cotingids (Snow 1982). Normal flight between canopy perches is undulating like that of large woodpeckers.

In July and November 1983, flight displays were observed. In July, on a bright, sunny day, a single bird in adult male plumage was observed flying around the tower, returning frequently to perch in a large emergent Lecythidaceae near the tower. At c. 08:00 it flew from this perch, climbing at a steep angle with a very stereotyped, rapid and shallow wing beat with little apparent upstroke above the level of the body, a flight pattern reminiscent an American Kestrel's *Falco sparverius* food begging flight. The bird climbed in a wide spiral to c. 20-30 m above the canopy and then abruptly set its wings out horizontally and began a slow descent to the emergent from which it had flown. The display was repeated c. 10 times prior to our departure at 09:00. The November observations were virtually identical, with the exception that the display flight was made over a deforested area at the Fazenda Esteio; as at the tower, an adult male was seen on the same dead snag on each of several days of observation. No vocalizations were heard during the displays.

One bird in female plumage, when observed from directly beneath, was heard to snap its wings together sharply twice immediately upon leaving its perch.

Fruitcrows have been heard vocalizing on the WWF/INPA reserves on the Fazendas Porto Alegre and Esteio. The vocalization was a short, low-pitched hoot reminiscent of the Flammulated Owl *Otus flammeolus*, repeated at irregular intervals of several seconds. The call was recorded and has been deposited at the Library of Natural Sound at Cornell University, Ithaca, New York, and at the Instituto de Bioacustica at the University of Campinas, in Campinas, São Paulo, Brazil.

While observing a pair of Crimson Fruitcrows, D.F.S. observed the female glean a 3 cm Orthopteran from the branch on which she was perched. While being manipulated, the insect escaped, but the female swooped down c. 3 m and caught it again. On another occasion, 2 males were witnessed successfully sallying from the canopy for large orthopterans. The only other known food items for the species are from stomach contents, all of them invertebrates: Novaes (1978) reported a Buprestid beetle (*Coleoptera*) 3.5 cm long, and Haverschmidt (1977) also reported Coleoptera. The aerial recovery of the escaped insect and the sallying bouts suggest that invertebrate prey is a not unusual item of diet.

Two individuals have been observed in an unusual plumage. In the first, patches of crimson were superimposed on a grey background on the ventral surface, while on the second, the breast and belly were crimson

with patches of grey, suggesting that there may be an as yet undescribed immature plumage for this species.

The frequency of sightings of the Crimson Fruitcrow suggests that it is less common than the Pompador Cotinga *Xipholena punicea*, which was seen on c. 90% of the census days, but is significantly more common than either the Spangled Cotinga *Cotinga cayana* or the Purple-breasted Cotinga *C. cotinga*.

Snow (1982: 153) suggests that the Capuchinbird *Perissocephalus tricolor*, may competitively exclude other large fruitcrows. In the study area north of Manaus, both *P. tricolor* and *H. militaris* are, for large cotingids, relatively common, suggesting that in suitable habitat of several hundred km² these 2 species are not exclusive.

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Additions and corrections to the avifauna of Zaïre (1)

by M. Louette

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The following comments are mainly due to reidentifications of specimens in Koninklijk Museum voor Midden-Afrika (KMMA).

Falco amurensis

It is noteworthy that there are in fact 4 specimen records of this migrant from Zaïre (all in KMMA): Lokoma (Equateur), 23 January 1949; Bambesa (Uele), 4 February 1938; Butembo (Kivu), 12 October 1957; and Kinda (Shaba), 20 October 1914. The last 2 mentioned are reidentifications.

Curry-Lindahl (1981) mentions a spring passage in eastern Kivu in April (once), presumably his own observation.

Bucorvus leadbeateri

As far as I know nothing has been published on this bird's occurrence along the middle Zaïre River, though shown there (4 dots at c. 2°-4°S, 17°E) in Snow (1978). Lippens & Wille (1976), however, give records more to the southeast, for Kwilu and Kwango (along the River Kwango).

Apaloderma aequatoriale

Shortly after commenting that the atlas map of *A. aequatoriale* in Snow (1978) needed no adjustments (Louette 1984), I started reinvestigating this species. I must change this statement now; the KMMA has a number of specimens, formerly misidentified as *A. narina,* from the east-central part of the equatorial forest, suggesting that *A. aequatoriale* has a continuous distribution in that biome from about Mt Cameroon eastwards (Fig. 1).

Figure 1. Distribution of *Apaloderma aequatoriale*. Shading indicates equatorial forest.

Batis minor and *B. molitor*

Hall & Moreau (1970) show overlap of these 2 taxa in southwest Zaïre and along the Albertine rift. Nevertheless, they consider both as belonging to one complex superspecies which includes the other *Batis* savanna species and, though they can be divided on ecological grounds, even the smaller forest forms of the *minulla, minima* and *poensis* groups. Lawson (1986) has shown that the forest forms are distinct and announces a general study of the savanna *Batis.* The present notes will be limited to clarifying the distribution in Zaïre.

Rand (1953) studied the situation in East Africa and Britton (1980) noticed that overlap between *B. minor* and *B. molitor* is more apparent than real there: in relation to Zaïre's boundaries, *B. molitor* occurs in Tanzania and *B. minor* in Uganda (except in the southwest). The situation

in Zaïre is the same; both species there are in fact also parapatric (see below).

TABLE 1
Batis minor and *B. molitor* populations from Zaïre.
Measurements in mm

Taxon Region		Wing n	av.	range	Tail n	av.	range	Tail/ Wing
minor								
nyansae N Zaïre (including 4 ♂♂ from	♂♂	11	58.7	57.0–61.0		42.7	40.0–46.0	.727
Cameroon)	♀♀	15	57.9	54.5–59.5		41.6	40.0–43.5	.718
nyansae Kasai,	♂♂	12	58.9	56.5–60.0	(11)	42.5	40.5–44.0	.722
SW Zaïre	♀♀	12	58.4	55.0–60.0		41.7	40.0–45.0	.714
minor/molitor?								
puella Kivu, Rwanda	♂♂	16	61.1	58.5–64.0		43.7	41.5–46.0	.715
	♀♀	17	60.3	57.5–64.5	(16)	43.6	40.5–46.0	.723
molitor								
pallidistergum Kasaji	♂♂	10	62.9	61.0–65.0		39.9	38.0–41.5	.634
(Shaba)	♀♀	15	61.8	60.0–64.0		40.5	38.0–42.0	.655
pallidistergum Upemba	♂♂	9	63.9	62.0–67.0		41.5	40.5–43.0	.649
(Shaba)	♀♀	7	63.2	62.0–64.0		42.6	40.0–44.5	.674
pallidistergum	♂♂	12	62.6	59.5–64.5		39.8	38.0–43.0	.635
Rest of Shaba	♀♀	13	61.5	60.0–65.0		40.4	37.0–43.5	.656

Females of this complex can easily be assigned to species using the presence or absence of a brown chin-spot, but males are extremely similar and the characteristics used in literature to separate the species are not very useful (e.g. the extent of the white supraloral line – Chapin 1953). I have measured geographical populations (Table 1) and find that differences are small, although *minor* is somewhat smaller on average than *molitor,* and they have a different tail/wing ratio.

In Lower Zaïre and Kasai (see Map in Louette 1986: 130) only *B. minor* has been found, contiguous with the range in Angola. The subspecific name once applied to this population is *congoensis* (see below). In northwestern Angola, *B. minor* (Traylor (1962) lists 3 localities near Malange) nowhere overlaps with *B. molitor,* although the *B. molitor* specimen cited by Chapin (1953) from Tembo Aluma (7°39′S, 17°16′E) in Angola was close to the Zaïre border. Still in Angola, Traylor (1962) also lists Dundo (7°21′S, 20°40′E), very close to the Zaïre border, for a male *B. molitor,* though he does not say how he determined the species.

The KMMA has a female *B. molitor* from Ngombe (6°35′S, 20°43′S), Kasai, close to the Angola border. This is the only locality in Zaïre for *molitor pintoi,* described from Angola by Lawson (1966) as considerably darker than the race *pallidistergum,* found more to the east (in Shaba and Zambia), with intermediates in northeast Angola. It should be noted that until then the Angola population had been called *puella* (see e.g. Rand 1953). Benson *et al.* (1971) claim that *pintoi* has a darker chin-spot than *pallidistergum,* stating that *pintoi* occurs also in extreme northwestern Zambia, in the Mwinilunga area. The KMMA has specimens from Angola and Zambia, including some from Mwinilunga but I find them inseparable

from the Shaba birds. Birds from western Shaba (Kasaji) tend to be paler, contrary to what one would expect from Lawson (1966). I have considered them separately in Table 1, but they are similar in measurements to the other Shaba birds. *Pro usu* I name all *B. molitor* from Shaba as *B. molitor palliditergum*, whereas Chapin (1953) only included birds from the Marungu in the race of south-central Africa (named nominate *molitor* in his time).

Kivu and Rwanda are populated by a *B. molitor* form with possibly somewhat darker dorsal colouring than the Shaba specimens and with dark brown chin-spotted females. The males have a grey head top, not black as in some *B. minor,* though generally darker than in *palliditergum*. *Pro usu* I will call these birds *molitor puella,* a race described from Bussisi, Lake Victoria. A female labelled "Maniema" (southern Kivu province) belongs to this race (wing 63.5, tail 45.5 mm). A male from Kabambare (in Maniema) has wing 63, tail 42 mm, and could be either race. A pair from Mt Kabobo, extreme northeastern Shaba agrees in measurements with *palliditergum* (male: wing 63, tail 39 mm; female: wing 62.5, tail 40.5 mm). *B. molitor puella* abuts on northern *B. minor* (subspecies *nyansae*) in the extreme northern part of Kivu, near Butembo (0°09′N, 29°17′E). At Lutunguru (0°29′S, 28°47′E) 3 males were collected: one with a grey head top, the second one with a dark grey head top, the third with an almost black head top. They may belong to either species.

I find that many males from northern Zaïre have the head top blackish, just a few have it dark grey. In southwest Zaïre there seem to be more males with head top dark grey, but in view of the individual variation mentioned and the data in Table 1 I tend to agree with Chapin's (1953) point of view that *B. minor congoensis* of Lower Zaïre and Kasai is a synonym of *B. minor nyansae* of northern Kivu. The fact that these 2 *B. minor* populations are separated from each other by the equatorial forest block on the one hand and by the paraspecies *molitor* more to the east does not contradict this synonymy. It was shown elsewhere (Louette & Prigogine 1982) that the woodpecker *Dendropicos goertae* is also a recent immigrant from the north in southwestern Zaïre, in a period when the forest was split into relict patches. The case of *B. minor* is very similar to the one described there, although the woodpecker from Kasai has attained subspecific status.

Butembo is the only locality in Zaïre where chin-spotted and white-throated females are found together: *B. minor* and *B. molitor* are thus parapatric in Zaïre. There is however an adult female specimen without chin-spot from "Usumbura" (Burundi) thus being an apparent *B. minor* in '*B. molitor* country' (2 female *puella* from south of there are in KMMA). Chapin (1953) was doubtful about this occurrence and it may possibly be a mislabelled specimen. On the other hand if *B. minor* and *B. molitor* are closely related (as I think they are), interbreeding may account for specimens such as the Usumbura specimen and if the chin-spot is a character commanded by a simple genetic formula. I must add that there is a very dark male specimen from Bitshombo (3°30′S, 28°50′E), quite close to Usumbura, which may also be *B. minor.* It is very large (wing 65.5, tail 47.5 mm) and the possibility cannot be ruled out that there is a small

pocket of *B. minor* in *B. molitor*'s range in this area. Also at Djambala, in Congo Republic, according to Rand *et al.* (1959) females of both species were collected, which is well to the north of the contact in Angola (see above).

There is an aberrant ♂ specimen from Lusambo, Kasai (4°58′S, 23°25′E) in KMMA. In measurements (wing 62 mm, tail 44 mm) it corresponds to *minor*, but it has too much lustrous black in the plumage. There is only some white left on the dorsal side:– a little in front of the eyes, on the neck and here and there on the mantle and rump. Also, the white margins of the rectrices are very narrow. There is a black patch on the chin. This is much the darkest specimen known in this complex. (Also kindly examined by Dr C. Erard.)

Considering all this, there is an alternative taxonomic hypothesis to be investigated. If one considers tail/wing ratios of the populations in Zaïre (Table 1) it becomes clear that the geographical (and size) intermediate *puella* from Kivu and Rwanda is in the same range as the 2 *B. minor* populations and not in those of the Shaba *B. molitor palliditergum*. One could interpret this as a relationship of *puella* to the *B. minor* group, rather than to the *B. molitor* one. On the other hand the tail/wing ratios as calculated from Lawson's populations (1966) disagree with mine; they are as follows: *pintoi* ♂♂ .694, ♀♀ .685; *palliditergum* ♂♂ .725, ♀♀ .724; *puella* ♂♂ .684, ♀♀ .696.

Lawson's *B. molitor pintoi* specimens are well localised (in Angola), but the provenance of his other material is not specified, though probably east and south Africa. A general study may possibly show tail/wing ratio to be variable from one region to another in the whole of the *minor/molitor* range. The study announced by Lawson should make this clear. On the other hand, the presence of a chin-spot may prove not to be a specific character. The fact that in the Butembo region females of both phenotypes occur together is no proof of specific difference between *nyansae* and *puella*. In the absence of field studies and data on the contacts elsewhere in eastern Africa, in Angola and possibly in southeastern Kasai or northwestern Shaba, a hypothesis of conspecificity cannot yet be developed here.

Nectarinia bannermani and *N. verticalis*

No doubt Traylor (1962), followed by Hall & Moreau (1970) is correct that these 2 are separate species. However, it is not proven that they are really sympatric in any one area. In Angola, M. A. Traylor confirms that there is a *N. verticalis* specimen from Duque de Bragança whereas a *N. bannermani* specimen was collected at "42 km N.E. of Duque de Bragança". He therefore now feels that the statement "overlaps . . . in Malange" (1962: 115) may be "too strong a word". Evidence of sympatry in Zaïre is implicit in the statement by Lippens & Wille (1976) that they saw *bannermani* at Lusinga (8°56′S, 27°12′E) in the Upemba park and indeed, their picture (920: 418) represents this species; but from the files of H. Lehaen, the photographer of the expedition, it appears that it was taken at the Kundelungu, not at Lusinga. Verheyen's (1953: 593–594) specimens from the Upemba, reexamined by me, all prove to be *N. verticalis*, not

N. bannermani. Some of these latter specimens are also from Lusinga and the immediate neighbourhood, but were collected there 25 years before Lippens' & Wille's observation. *N. bannermani* occurs also at Kasaji (10°21'S, 23°29'E) (*in* Schouteden 1971), but the specimens from Kinda (9°18'S, 25°04'E) and Kayembe Mukulu (9°03'S, 23°57'E) (in KMMA) listed by him are *N. verticalis*. Also the specimen from Kapanga (8°02'S, 22°35'E) (Schouteden 1956) cannot be found and this locality must be deleted from *bannermani's* range. Lippens & Wille mention both species from the Kundelungu, more to the east, near the Zambian border, and they produce a picture of what is almost certainly *N. verticalis* (121: 419) and another of *N. bannermani* from there (see above). However, in the adjoining part of Zambia only *N. verticalis* occurs (Benson *et al.* 1971). In the Marungu neither of these 2 species has been recorded, but a race occurs there of the related *N. alinae* with some characteristics of *N. verticalis* (Dowsett & Prigogine 1974; Prigogine 1975).

Now remains the question of the subspecific identification of the Shaba *N. verticalis*. Chapin (1954) considers *bohndorffi* as inseparable from *cyanocephala*, the latter name thus applying to the birds of southwestern Zaïre (Kasai included). In Kivu, but also in Zambia (Benson *et al.* 1971), the race *viridisplendens* (with a greener lustrous head colour) occurs. The Upemba birds, mentioned above, tend to be greenish in lustre, whereas the specimens from Kinda, Kayembe Mukulu, and also one from Munie Mkoba (Maniema) decidedly are more bluish, thus agreeing better with western *cyanocephala*. It is probably a safe course to consider Shaba as a zone of contact between the 2 races *cyanocephala* and *viridisplendens*.

Nectarinia talatala

Two female specimens collected on 20 July 1969 at Mopala (in the Shaba panhandle) constitute the first records for this species from Zaïre. It is well known in the adjoining part of Zambia (Benson *et al.* 1971).

Ploceus insignis

The KMMA has a female specimen from Kasaji, Shaba, collected by Rev. Fisher on 23 July 1951. It was wrongly identified before as *P. bicolor.* The register data and preparation make me feel certain that no label error is involved. This locality is very far from the known range on the Albertine rift and in Cameroon. However, there is also a unique male from lowland forest at Gabela, Angola (Traylor 1962); but in Moreau (1959) Traylor found it "indistinguishable from a series from East Africa" and he has now most kindly sent me standard measurements (in mm, wing 83, tail 40, culmen 15.5, tarsus 20). These agree well with those from Kivu specimens. The female from Kasaji has a wing chord of 74.5 mm (right) or 74 mm (left), smaller than 24 adult females I measured from Kivu and Uganda (range: 78.5–82, mean 79.7 mm) but this could be due to skin preparation having the wings tight to the body. The tail length is 44 mm, being in the range of the same sample: 43.5–47 (mean 44.7 mm). Therefore I do not think that the Shaba (and Angola) bird deserves a new subspecific name, especially because in colour it is indistinguishable.

There is thus new evidence that *P. insignis* is not exclusively a montane

species (*contra* Lewis 1986) as there is also the observation by Brosset & Erard (1986) of a male bird in lowland Gabon. Incidentally, Heinrich (1958) mentioned another field observation at Duque de Bragança, but this was doubted by Traylor (1962). It may well be that *insignis* is present over a wider area in Central Africa, even out of the main forest block, than was accepted up to now.

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Books Received

Perrins, C. M. 1987. *Birds of Britain and Europe*. Collins New Generation Guide. Illustrated in colour. Paperback. Collins. £6.95 195 x 125 mm.

Yet another field guide, but in this case combined with a useful, clearly written, illustrated introduction to the biology of birds. The book is in 4 parts. Part 1, 50 pages, describes "The Evolution of birds" (including subjects such as the digestive systems, sense organs, reproduction and speciation). Part 2 is a so-called directory of all species which breed in or move to Europe (excluding vagrants), each depicted in various plumages and there are distribution maps and cross references to the other parts of the book. Parts 3 and 4 describe "The Life of a Bird" and "The Ecology of Birds", from hatching, feeding, migration to nests, eggs and parental care and adult survival, and from population communities to conservation and changes in populations, historically and in the present. The print and pictures to identify the species are tiny in many cases and may prove less attractive than several other guides, which is a pity, since the biological text has much to commend it, and the original illustrations by Norman Arlott for the directory are probably excellent.

Knystautas, Algirdas. 1987. *The Natural History of the USSR*. Translated by John S. Scott. Pp. 224. Illustrated with 275 colour photographs. Century Hutchins. £14.95. Hardback 280 x 210 mm.

There are chapters on shaping of a subcontinent (geology, peoples, physical geography, climate), vegetation and animal distribution, conservation and, covering much the largest part, types of landscape, in 6 classes, with notes on flora and (almost wholly vertebrate) fauna, both typical and noteworthy, with maps showing reserves. The photographs are of a high standard and birds are well represented in text and photographs, including pictures of several rare endemics. An excellent review of the natural history of the world's largest country.

NOTICE TO CONTRIBUTORS

Papers, from Club Members or non-members, should be sent to the Editor, Dr J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely to the *Bulletin.* They should be typed on one side of the paper, with double-spacing and a wide margin, and submitted with a *duplicate copy on airmail paper.* Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin.* Informants of unpublished observations should be cited by initials and name only, e.g. "... catches wasps (B. Eater)", but "B.B.C. Gull informs me that ...". Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction. Authors are requested to give their title, initials, name and full address (in the form they wish to be corresponded with) at the end of the paper.

An author wishing to introduce a new name or describe a new form should append *nom., gen., sp.* or *subsp. nov.,* as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of Type" and "Material examined", plus any others needed.

A contributor is entitled to 10 free reprints of the pages of the *Bulletin* in which his contribution, if one page or more in length, appears. Additional reprints or reprints of contributions of less than one page may be ordered when the manuscript is submitted and will be charged for. Authors may be charged for proof corrections for which they are responsible.

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Available on application to Mrs D. M. Bradley, 53 Osterley Road, Isleworth, Middlesex TW7 4PW as follows: 1983 and after (Vols. 103 and after) £3.50 each issue, 1981-2 (Vols. 101 & 102) £3 each issue, 1980 (Vol. 100) No. 1 £4, No. 2, 3 & 4 £2 each, 1973-9 (Vols. 93-99) £2 each issue (4 issues per year for Vol. 93 and after), 1969-72 (Vols. 89-92) £1.50 each issue (6 per year), 1929-68 (Vols. 50-88) £1 each issue (generally 9 per year), earlier than Vol. 50 £2 each issue (generally 9 per year); Indices Vol. 70 and after £1 each, Vols. 50-69 £2 each, Vol. 49 and before £4 each. Long runs (at least 10 years) for Vol. 50 and after are available at reduced rates on enquiry. Orders over £50 post free.

MEMBERSHIP

Only Members of the British Ornithologists' Union are eligible to join the Club: applications should be sent to the Hon. Treasurer, Mrs D. M. Bradley, 53 Osterley Road, Isleworth, Middlesex TW7 4PW, together with the current year's subscription. The remittance and all other payments to the Club should always be in *sterling* unless an addition of £3.00 is made to cover bank charges for exchange, etc. Payment of subscription entitles a Member to receive all *Bulletins* for the year. Changes of address and revised bankers' orders or covenants (and any other correspondence concerning Membership) should be sent to the Hon. Treasurer as promptly as possible.

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Correspondence about Club meetings and other matters not mentioned above should go to the Hon. Secretary, R. E. F. Peal, 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR.

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The *Bulletin* is now being sent by Bulk Air Mail to all European destinations outside the British Isles and by Accelerated Surface Post to almost every destination outside Europe. This will only apply to copies despatched from the printers on publication. Those whose subscriptions have not been received by the beginning of a month of publication will have their copies despatched by surface mail, after their current subscription has been paid. Changes of address cannot be incorporated in the Mailing List for any issue unless received by the end of the month before publication.

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British Ornithologists' Club

Edited by

Dr J. F. MONK

Volume 107 No. 4 December 1987

FORTHCOMING MEETINGS

Tuesday, 19 January 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7, **Dr D. W. Snow** will speak on **"The B.O.U. Expedition to Colombia – a progress report".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on Tuesday, 5 January, if possible*.

We are fortunate to have as our speaker on Colombia Dr David Snow, President of the B.O.U. and an outstanding authority on Neotropical birds, and to hear from him of the progress of this major expedition of the Union.

Tuesday, 16 February 1988 at 6 pm in the Lecture Theatre of the British Museum (Natural History), Cromwell Road, S.W.7, **Dr David Nettleship** will show two of his colour films of Atlantic seabirds, **"The Sea Ravens"** and **"Gannets of Bonaventure Island".** There will then be dinner in the Senior Common Room, Sherfield Building, Imperial College, which is nearby, at about 7.30 pm, after which Dr Nettleship will speak on **"Status and prospects of seabirds in the N.W. Atlantic".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary (address above) by first post on Tuesday, 2 February, if possible*.

Dr David Nettleship, of the Canadian Wildlife Service, Bedford Institute of Oceanography, Dartmouth, Nova Scotia is well known for his important studies of seabirds, also for the magnificent films which he has produced. The films will provide examples of problems associated with the management of seabirds and the address will highlight recent findings regarding the major populations of seabirds breeding in north-eastern N. America.

Tuesday, 8 March 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7, **Dr J. J. D. Greenwood** will speak on **"The summer life of the Snow Bunting".** Those wishing to attend should send their acceptance with a cheque for £5.00 a person to reach the Hon. Secretary (address above) by first post on Tuesday, 23 February, if possible*.

Dr Jeremy Greenwood, who takes up his appointment as Director of the B.T.O. at the beginning of 1988, is already well known to many Members and has been studying the Snow Bunting whilst working at the University of Dundee.

Tuesday, 10 May 1988 at the same place, **Dr Euan Dunn** will speak on **"A year in the life of terns"**, with special reference to survival in winter quarters.

Monday, 11 July 1988 at the same place, **Dr C. C. H. Elliott** will speak on **"The Quelea problem in Africa".**

*It will be possible to take acceptances up to the weekend before the Meeting, but Members are asked to accept by 14 days before the Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

A plan of the area where these Meetings will be held will be sent to Members who request it when sending their acceptance for a Meeting.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 107 No. 4 Published: 18th December 1987

The seven hundred and seventy-third Meeting of the Club was held in the Ante-Room, Sherfield Building, Imperial College, London S.W.7 on Thursday, 16 July 1987 at 6.15 pm. The attendance was 22 Members and 8 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, Miss H. BAKER, Mrs DIANA BRADLEY, D. R. CALDER, S. J. W. COLES, J. H. ELGOOD, Revd. T. W. GLADWIN, B. GRAY, D. GRIFFIN, R. H. KETTLE, J. KING, I. T. LEWIS, Dr J. F. MONK, Mrs AMBERLEY MOORE, R. G. MORGAN, Mrs MARY N. MULLER, J. G. PARKER, R. E. F. PEAL, G. ROWE, R. E. SCOTT, N. H. F. STONE, and C. F. TURNER.

Guests present were: Mrs J. B. CALDER, R. K. COLES, Mrs J. M. GLADWIN, P. J. MOORE, C. A. MULLER, I. PROUD, R. RANFT and Commander R. D. M. W. THOMAS-FERRAND, R.N.

Mr R. E. Scott spoke on "Israel and its Birds". He illustrated his address with excellent slides, showing the various bird species, the distribution and ecology of which in Israel and adjoining countries he discussed.

The seven hundred and seventy-fourth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 15 September at 7 pm. The attendance was 17 Members and 13 guests.

Members present were: Revd. G. K. McCULLOCH *(Chairman)*, M. ADCOCK, R. BEECROFT, Mrs D. M. BRADLEY, S. J. W. COLES, P. J. CONDER, J. H. ELGOOD, B. GRAY, D. GRIFFIN, I. T. LEWIS, Mrs A. MOORE, R. MORGAN, Mrs I. MULLER, G. ROWE, N. STONE, A. TANNER, and Dr A. TYE.

Guests present were: Lt-Col C. N. CLAYDEN *(speaker)*, Mrs ADCOCK, M. BOYLE, D. BRADLEY, Mrs J. BURNETT, Miss J. EDRICH, Mrs S. LEWIS, Mrs N. LIDELL, Mrs I. McCULLOCH, P. J. MOORE, C. A. MULLER, I. PROUD and Mrs H. TYE.

Lt-Col C. N. Clayden gave a very interesting talk on 'Birds on Ministry of Defence Property' illustrated with slides of a wide variety of habitats on M.O.D. property in England, Scotland and Wales. He showed how careful management of the land has significantly increased suitable habitats for many rare mammals, reptiles, insects and plants, as well as for birds.

Species status of the Malaysian three-toed kingfishers (*Ceyx*) – a re-assessment

by S. Dillon Ripley and Bruce M. Beehler

Received 17 December 1986

For a number of decades there has been some uncertainty about the status of 2 Sundaic kingfisher populations of the genus *Ceyx*. *Ceyx erithacus** is marked with black and blue on the back and wings and, in general, ranges through the northern and western parts of southeast Asia. Its sibling form, *Ceyx rufidorsus* is pale rusty brown dorsally (with a lilac wash), and occurs, in general, to the south and east of *erithacus* (Fig. 1). In allopatry the 2 forms appear to be morphologically well-defined species. However,

**Ceyx erithacus* is polytypic, with 4 subspecies (nominate, *macrocarus, motleyi, captus*). This follows Forshaw & Cooper (1983), who consider *rufidorsus* monotypic.

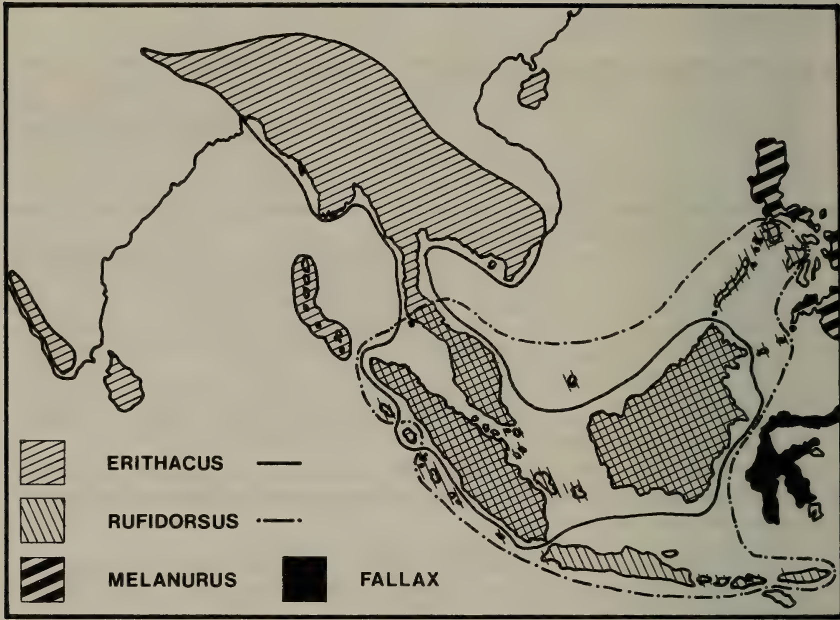

Fig. 1. Distribution of 4 species of *Ceyx* in southeast Asia. Note area of sympatry of *erithacus* and *rufidorsus* centring on Borneo, Sumatra and Malaya.

in Malaya, Sumatra and especially Borneo, both parental forms, as well as many intermediates, occur, with individuals exhibiting varying levels of similarity to one or the other parental form. Ripley (1942) presented an analysis of plumage characters in regional populations of these three-toed kingfishers, offering the opinion that, in spite of considerable levels of hybridization in sympatry, both taxa should be recognized as species.

Subsequent to this, the problem has been re-analysed with the aid of additional data, both by Voous (1951a, b), who tentatively supported Ripley's (1942) opinion and Sims (1959), who suggested that the 2 forms be considered conspecific.

Fry (1980), in his recent revision of the family Alcedinidae, treated the 2 taxa as conspecific, although he provided no discussion of the problem. In their monograph of the Coraciiformes, Forshaw & Cooper (1983), who followed Fry (1980) in most other opinions, chose, in this instance, to follow Voous (1951a, b) and Ripley (1942). Opinion seems to be divided throughout the literature. Those lumping the 2 include: Smythies (1960), Wolters (1976), Ripley (1982) and White & Bruce (1986). Those favouring splitting the 2 include: duPont (1971), Lekagul & Cronin (1974), King *et al.* (1975), Medway & Wells (1976) and Clements (1981).

For a number of reasons, including the clear ambivalence expressed in the literature, we believe that the *Ceyx erithacus/rufidorsus* problem should be reassessed. The analyses of Ripley (1942) and Voous (1951a, b) depended upon data that were incomplete, and although Sims was able to

study large series of specimens, his analysis was hampered by some misconceptions about the biology of hybridization and a failure to interpret fully the data he had available.

Here we re-examine this 'species problem', and try to answer 4 questions: (1) Should *rufidorsus* and *erithacus* be treated as conspecific? (2) What is the origin of the pale-mantled Bornean population of *erithacus?* (3) What is the status of the single Sikkim specimen that is referred to *Ceyx rufidorsus* – far from its regular range? (4) Are systematic relationships of the endemic species of *Ceyx* from Sulawesi and the Philippines important for an understanding of the history of *erithacus* and *rufidorsus* in Sundaland?

Methods

In our study we excerpt and incorporate the abundant data of Sims (1959) with an additional set of 87 specimens studied from the collections of the National Museum of Natural History (Washington, D.C.) (NMNH), the American Museum of Natural History (New York) (AMNH) and the Bombay Natural History Society (BNHS). We were able to compare specimens from Sri Lanka, southwestern India, Sikkim, Thailand, Malaya, the Andaman and Nicobar islands, Sumatra, Java, Borneo, the Philippines and Lesser Sunda Islands.

Hybrids show a mixture of parental plumage characters or characters of an intermediate nature. Following the methods outlined by Sims (1959), we gave each of the 87 specimens a graded numerical value, based on the presence and extent of dark pigment in 4 areas: (a) forehead, (b) side of neck, (c) scapulars and (d) wing coverts. For each character the value ranges from zero for no dark pigment (pure *rufidorsus*) to 25 for maximum dark pigment (pure *erithacus*). Each specimen then receives a *total* character value (ranging from zero for pure *rufidorsus* to 100 for pure *erithacus*), simply the sum of the 4 individual character values. We then combined our graded data with those of Sims (1959: Fig. 1, p. 214).

Species status

For several reasons, we believe *rufidorsus* and *erithacus* are good species, in spite of the clear evidence for hybridization where the 2 populations come into contact. In Malaya, where both forms occur, the frequency distribution of pure parental types *vs.* intermediate forms (Fig. 2) indicates a tendency towards assortative mating. The 2 best-collected morpho-types in the area of overlap are the 'pure' or 'nearly pure' forms of *erithacus* and *rufidorsus* (coded 0-15, and 95-100 in Fig. 2), which account for 73% of the specimens analysed.

As noted by Sims (1959), because there is apparent migratory movement in Malaya by both *erithacus* and *rufidorsus*, the exact extent of breeding sympatry is unknown. Nests of both species have been recorded on the Peninsula (Chasen 1939), but there are too few nesting data to prove micro-geographic breeding overlap. Sims used this point to argue that significant sympatry did not occur. However, if *erithacus* bred only to the north and *rufidorsus* only to the south (allopatrically), then the sizeable number of intermediates we find on the Peninsula would be unexpected (Fig. 2). Both Riley (1938) and Lekagul & Cronin (1974) indicate that

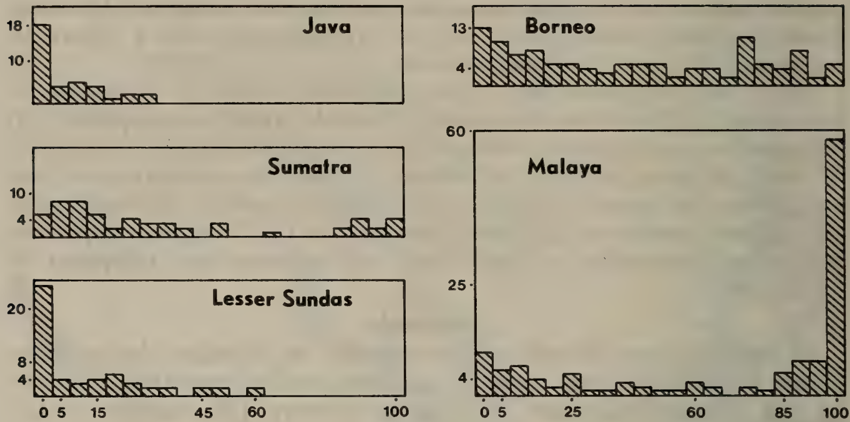

Fig. 2. Frequency distribution of specimens of *Ceyx rufidorsus* and *erithacus* showing parental and intermediate plumage characteristics, as measured by the technique of Sims (1959). Y-axis=number of specimens, X-axis=plumage coding (0=pure *rufidorsus*, 100=pure *erithacus*). See text for further explanation.

rufidorsus is resident as far north as Surat Thani (Bandon), implying that *erithacus* and *rufidorsus* share the southernmost 500 km of the Malay Peninsula.

We interpret the data from Sumatra as supporting our contention that 2 species are involved. Whereas specimens of hybrid origin are present in good numbers on Sumatra, the distribution of morphotypes shows a clear break (Fig. 2). To us, this implies that hybridization may no longer be occurring, with the populations tending to maintain the 2 parental forms, on the assumption that some sort of isolating mechanism has developed between the 2 forms on Sumatra. (Compare, especially, the distribution of intermediates on Sumatra with that on Borneo, where the situation is materially different.) Whether the Sumatra data 'prove' the specific status of *rufidorsus* and *erithacus* may depend on migration. Possibly *rufidorsus* breeds on Sumatra, while the specimens of *erithacus* are non-breeding vagrants or migrants. Birds in the Malay Peninsula are reported to breed in March and April (Chasen 1939), so the presence of *erithacus* in Sumatra in April, May, June or July would suggest they breed there; at present, however, we do not know of any specimens of *erithacus* from Sumatra during these breeding months.

For Java and the Lesser Sundas (Fig. 2), it is clear that, although *erithacus* genes continue to persist, pure *erithacus* no longer inhabits these islands, and the largest proportion of birds taken are pure *rufidorsus*. No hybrid specimens can be associated with true *erithacus*. To us, this evidence argues that in spite of one or more hybridization events having occurred previously on these islands, the presumably autochthonous form, *rufidorsus*, then out-competed the invading *erithacus*; but no true 'hybrid swarm' emerged, nor did a new 'single' form of 'hybrid origin' descend from the event. This too, supports our notion that both *rufidorsus* and *erithacus* are good species.

In supporting his claim that the high levels of hybridization between the 2 forms indicate they are conspecific, Sims (1959) cited for support the example of the *Melidectes belfordi/rufocrissalis* complex of honeyeaters of New Guinea, as outlined by Mayr & Gilliard (1952). Sims noted that this species-group hybridized extensively, and that Mayr & Gilliard treated the resulting forms as subspecies of *M. belfordi*. For 2 reasons this example does not serve Sims' argument well. First, subsequent treatments of the *Melidectes belfordi/rufocrissalis* problem have invariably determined that 2 species should be recognized (Gilliard 1959, Diamond 1967, Beehler & Finch 1985). Secondly, in a number of instances this hybridization event has produced "hybrid subspecies" – populations that are morphologically stable (e.g., *M. belfordi stresemanni*), but which are nevertheless unambiguously intermediate between the 2 parental forms. The *Melidectes* example, then, cannot be cited to support the lumping of the Malaysian three-toed kingfishers.

The Borneo Problem

In 2 respects, the situation in Borneo (Fig. 2) differs from that elsewhere: (a) intermediate forms far outnumber 'pure' parental types, and the data in Figure 2 imply a panmixia of the 2 forms in Borneo; (b) the Bornean *erithacus* (subspecies *motleyi*) differs from nominate *erithacus* in having a brown mantle, a character that otherwise would be attributed to *rufidorsus*. Sims (1959) failed to fully acknowledge this last curious fact; but we believe the subspecies *motleyi* is of hybrid origin, analogous to the above-cited example of the New Guinean honeyeater 'hybrid subspecies' *Melidectes belfordi stresemanni*.

We explain the Bornean situation as follows: (1) insular Borneo was originally occupied by a *Ceyx* population of already hybrid origin, perhaps a product of *erithacus/rufidorsus* contact on the expanded Sundaland during a period of low sea level (cf. Voous 1951a). This hybrid population was dominated by *erithacus* genes, but showed the pale mantle of *rufidorsus*. (2) More recently, Borneo has been reinvaded by pure *rufidorsus* (perhaps during another period of low sea level). (3) Unlike the Sumatran and Javan examples, neither parental form has come to dominate, and hybrid introgression seems to be occurring. This may, in part, be caused by the fact that both parental stocks carried *rufidorsus* genes. One might consider the Bornean example to be analogous to secondary contact between 2 subspecies, whereas at the other sites of re-contact the 2 parental populations are behaving like sibling species – with hybridization, but not introgression.

Rufidorsus in Sikkim?

We have examined the single specimen of *Ceyx rufidorsus* collected in the Sikkim terai, 22 July 1909, by C. M. Inglis, in the collection of the BNHS (see Abdulali 1964). It is pure *rufidorsus*, with a zero rating using Sims' method. Having examined the, apparently adult, specimen, we think it must have been a post-breeding migrant, possibly storm-blown up to the head of the Bay of Bengal by one of the typhoons that are common April-May and September-October (Ramdas 1974). Both *erithacus* and

rufidorsus are known to disperse (migrate?) considerable distances in the non-breeding season, demonstrated by the remarkable number of instances of these forest-dwelling forms evidently becoming disoriented during dispersal and appearing in urban areas and on several instances flying into homes (cf. Chasen 1939, Abdulali 1964, Medway & Wells 1976). More information on the nature of the movements of *Ceyx rufidorsus* would be valuable.

Ceyx in Insular Southeast Asia

It is clear that the dark-winged *erithacus* is essentially a mainland southeast Asian form that also inhabits Pleistocene land-bridge islands (Borneo, Sumatra, Hainan, Sri Lanka) (Fig. 1). Exceptions appear to be the hybrid *erithacus* populations on Mindoro (Philippines), Nias (West Sumatran Islands), and the populations of pure *erithacus* on the Andaman and Nicobar islands, west of the range of *rufidorsus*.

By contrast, the pale-winged *rufidorsus* exhibits a primarily insular distribution, from Mindoro, Panay, Palawan, Tawi Tawi (Philippines), south to the Lesser Sundas and a number of the West Sumatran islands; but also the 3 Greater Sundas, as well as part of the Malay Peninsula.

We agree with previous authors who assume that *erithacus* evolved in allopatry somewhere on mainland southeast Asia, while *rufidorsus* evolved in allopatry somewhere in the islands – we would guess in the Lesser Sundas. Debate about which form is 'older', when considered in isolation from data on other Malaysian *Ceyx* species (cf Sims 1959: 217), is, we believe, fruitless. Since the presumption is that the 2 forms speciated allopatrically by the subdivision of a single parental form, the question "which is older?" is irrelevant – they are sibling species sharing a common ancestor. Including *Ceyx melanurus* of the Philippines and *Ceyx fallax* of Sulawesi (Fig. 1), 4 well-marked taxa – *fallax, melanurus, rufidorsus,* and *erithacus* – must have evolved from the ancestral *Ceyx* inhabiting southeast Asia. Morphological evidence (cf Fry 1980) points to early evolution of the Philippines and Sulawesi endemics, while *rufidorsus* and *erithacus* evolved later. That *fallax* and *melanurus* are closely related to the *rufidorsus*/*erithacus* complex seems indicated by the fact that in neither case have these forms achieved sympatry.

We believe that the best explanation for the present distribution of the genus *Ceyx* in insular southeast Asia will be developed from a comparison of 2 sets of data: first, the details of the cycle of rising and lowering of mean sea level that has occurred on at least 3 occasions during the last 200,000 years (Chappell 1974); second, examination of the Sundaic distributions of other comparable well-defined, forest-dwelling avian species groups. Such an analysis is beyond the scope of this paper.

Acknowledgements: We wish to thank the curators in charge of the collections at the AMNH, NMNH and BNHS for permission to examine material in their care. Mrs M. LeCroy kindly selected specimens for the loan from the American Museum.

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Notes on some birds of northeastern Brazil (2)

by Dante Martins Teixeira, Jorge B. Nacinovic & Francisco B. Pontual

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In the last few years we have accumulated new records on the distribution of northeastern Brazilian birds. This report follows Teixeira *et al.* (1986), q.v. and is also based on the field work performed by the Ornithological

Section of Museu Nacional in the States of Alagoas, Pernambuco, Paraiba, Rio Grande do Norte and Ceara, and also in the Fernando de Noronha Federal Territory. Specimens in the Museu Nacional ornithological collection are referred to by the initials MN plus the respective catalogue number. English names and sequence of the species follow Meyer de Schauensee (1970).

PURPLE HERON *Ardea purpurea*

Between 11 and 13 June 1986, an immature specimen, in typical barred plumage, was observed on the artificial lakes of Fernando de Noronha Island (03°50'S, 32°24'W), side by side with *Bubulcus ibis* and *Ardeola ralloides* (see below). This seems to be the first record of this widely distributed Old World species for the Americas (cf. Blake 1977, Hancock & Elliot 1978, Hellmayr & Conover 1948 and others); even though vagrants of some Palaeartic herons (*Ardea cinerea, Egretta garzetta*) have already been recorded in South America (cf. e.g. Benson & Dowsett 1969, Novaes 1978), the ocurrence of 3 different species at the same time and in the same place is quite extraordinary and difficult to interpret – it could be linked to unusual weather conditions.

CATTLE EGRET *Bubulcus ibis*

Discontinuously distributed, the Cattle Egret has been observed in southern, southeastern and central Brazil from Rio Grande do Sul north to Mato Grosso, southern Goias and southeastern Minas Gerais. There are also some few records from Pará and Amazonas (Sick 1965, 1985). The Museu Nacional obtained an immature male (MN 34408, gonads 10 mm, 250 g, 480 mm total length) from the municipality of Passo de Camaragibe (c. 9°15'S, 35°30'W), northeastern Alagoas, in September 1985. We observed 2 other individuals on Fernando de Noronha Island between 11 and 16 June 1986. In conjunction with the records of *Ardea purpurea* and *Ardeola ralloides,* these records seem to point to arrivals of Old World birds in the Americas rather than an expansion of Brazilian populations to the northeast.

SQUACCO HERON *Ardeola ralloides*

Widely distributed in the Old World, the Squacco Heron seems to be unrecorded for the Americas (cf. Blake 1977, Hellmayr & Conover 1948 and others). Between 11 and 13 June 1986, we observed a non-breeding adult of this species on Fernando de Noronha Island, side by side with *Ardea purpurea* and *Bubulcus ibis* (see above).

WHITE-COLLARED KITE *Leptodon forbesi*

Described by Swann in 1922, *L. forbesi* is known from a single skin, probably an immature specimen, collected by W. A. Forbes in Pernambuco, northeastern Brazil (Forbes 1881, Hellmayr & Conover 1949, Swann 1922, 1935). In recent ornithological publications (Brown & Amadon 1968, Meyer de Schauensee 1970), *L. forbesi* has been unanimously considered to be an "aberrant young" of the Grey-headed Kite *Leptodon cayannensis,* a widely distributed species (Accipitridae) which has never been recorded in extreme northeastern Brazil (Pinto 1938, 1964, 1978, Sick 1985). In January 1986, however, the Museu Nacional obtained 3 specimens of *Leptodon* from the residual forests of Alagoas: a

breeding pair (MN 34416, male, gonads 12 mm, 580 g, 503 mm total length; MN 34417, female, gonad 25 mm, 550 g, 490 mm total length) from the lowland forests of São Miguel dos Campos (c. 09°47'S, 36°50'W), and a second female (MN 34418, gonad 22 mm, 600 g, 500 mm total length) from the highland forests of Serra Branca, Murici (c. 09°15'S, 35°50'W). These birds agree with *L. forbesi* descriptions in several characters such as the contrasting nuchal collar, the white underwing coverts, and a tail which is distinct from the *L. cayannensis* pattern. This material is presently under study, but the preliminary data suggest that *L. forbesi* is not an "abnormal young" of *L. cayannensis.*

ZONE-TAILED HAWK *Buteo albonotatus*

Spottily distributed in Brazil, this species has only been recorded from Marajó Island, Ceará, Pernambuco and Paraná (Pinto 1938, 1964, 1978, Sick 1985). However, the Museu Nacional houses an adult female (MN 23591) collected by J. Moojen (no date) at Bom Jesus da Lapa, Bahia (c. 13°15'S, 43°25'W). We have also observed this species in the sugar-cane fields of São Miguel dos Campos, Alagoas, and in the forests of Guaramiranga, Serra do Baturité, Ceará (c. 4°20'S, 38°56'W) during the last 2 years.

PEREGRINE FALCON *Falco peregrinus*

In January 1986, we observed an adult flying over the lower Jequiá River drainage, municipality of São Miguel dos Campos, coastal Alagoas, and in March 1986 3 others were captured alive in Recife (c. 8°05'S, 34°53'W), Pernambuco. These seem to be the first records for the species in northeastern Brazil.

BAT FALCON *Falcon rufigularis*

Widely distributed in South America, but not hitherto recorded from northeastern Brazil. On 20 February 1986, we observed one in the residual forests of the municipality of Porto das Pedras (c. 9°10'S, 35°20'W), coastal Alagoas.

BARE-FACED CURASSOW *Crax fasciolata*

During part of the period of Dutch rule in northeastern Brazil (17th century), naturalists and painters at the court of Maurice van Nassau-Siegen recorded the existence of a *Crax* species in the region. This bird, called 'Mituporanga' by Marcgrave (1648), was also figured in the colour pictures of the 'Theatrum Rerum Naturalium Brasiliae' (see also Schneider 1938, Whitehead 1976, 1979). According to our recent analyses of the ornithological material produced in Dutch Brazil, this curassow could be identified as a young male of *Crax fasciolata,* perhaps *C. fasciolata pinima,* as the colour picture of the 'Theatrum' figures a specimen with yellow face (which denotes sub-adult condition, cf. Teixeira & Sick 1986) and with the cere suffused with orange, which seems to be characteristic for males of *C. fasciolata pinima* from the lower Amazon. Rather surprisingly, this *Crax* from northeastern Brazil became extinct only in the 1930's according to information from old hunters in coastal Alagoas (Teixeira 1986). Of course it is impossible to decide if this *Crax* was an isolate population of *C. fasciolata pinima* or an independent taxon, and the Dutch Brazilian

zoological material seems to be the only documentation available on this vanished curassow.

GREAT-HORNED OWL *Bubo virginianus*

According to recent authors, this species was recorded in northeastern Brazil only by Reiser (1905), who described *Bubo virginianus deserti* from Juazeiro, northern Bahia (c. 9°25'S, 40°31'W). However, an example of this owl (presumably from coastal Pernambuco) was figured by G. Marcgrave (1648) in the 17th century, and we indeed observed a specimen of *B. virginianus* in the residual highland forests of Murici, Alagoas, on 19 January 1986. It is impossible to decide if these records are attributable to *B. virginianus deserti* or to the widely distributed *B. virginianus nacurutu*.

LONG-TAILED HERMIT *Phaethornis superciliosus*

In Brazil, this species is known from the Amazonian drainage (Meyer de Schauensee 1970, Pinto 1978). However, the Museu Nacional obtained a male (MN 33827, gonads 1 mm, 6.2 g, 169 mm total length) from the highland forests of Serra Branca, Murici, Alagoas, on 3 May 1984. Apparently this species also occurs in the residual lowland forests of this State.

BLACK-THROATED MANGO *Anthracothorax nigricollis*

Widely distributed in South America, this species has not previously been recorded in the extreme northeast of Brazil (cf. Hellmayr 1929, Pinto 1978). Nevertheless it is a rather common hummingbird in the residual forests of Alagoas, and the Museu Nacional obtained 2 males (MN 34486, gonads 2 mm, 7.2 g, 129 mm total length; MN 34487, gonads 3 mm, 8 g, 130 mm total length) from the municipality of São Miguel dos Campos, and a third male (MN 34488, gonads 2 mm, 6.5 g, 124 mm total length) from the municipality of Novo Lino (c. 9°01'S, 35°40'W) in January 1986.

FRILLED COQUETTE *Lophornis magnifica*

Known from eastern and central to southern Brazil (Bahia, Goiás and Mato Grosso south to Rio Grande do Sul), it also occurs in northeastern Brazil, whence we obtained an immature male (MN 34494, gonads less than 1 mm, 2.2 g, 77 mm total length) and an adult male (MN 34495, gonads 2 mm, 2.2 g, 78 mm total length) from Serra Branca, Murici, Alagoas, between 14 and 15 January 1986. Seen feeding on the flowers of *Inga affinis*.

VERSICOLOURED EMERALD *Amazilia versicolor*

Not previously recorded in northeastern Brazil. The Museu Nacional obtained a male (MN 34492, gonads 2 mm, 3.4 g, 96 mm total length) from Murici, Alagoas, on 14 January 1986. It was observed feeding on the flowers of *Inga affinis*.

RUFOUS HORNERO *Furnarius rufus*

Widely distributed in South America, but not hitherto recorded from the extreme northeast of Brazil (cf. Pinto 1978, Vaurie 1980). We obtained an adult male (MN 34525, gonads 4 and 2 mm, 42 g, 201 mm total length) from the lower Jequiá River drainage, municipality of São Miguel dos Campos, coastal Alagoas, on 26 December 1985. According to our

observations, the Rufous Hornero is a rather rare bird in this area, ocurring side by side with the Wing-banded Hornero *Furnarius figulus*, which is very common.

GREATER BLACK-CAPPED FOLIAGE GLEANER *Philydor novaesi*

Described only in 1983, *P. novaesi* is known from 2 adult males from Serra Branca, Murici, Alagoas. In the last 4 years, however, we have obtained 4 additional specimens of this Furnariid from the type locality, including 3 females (MN 33873, collected on 21 November 1983, gonad 9 mm, 30 g, 195 mm total length; MN 34530, collected on 16 January 1986, gonad 12 mm, 48 g, 221 mm total length; MN 34531, collected on 20 January 1986, 36 g, 207 mm total length). According to this material, the females of *P. novaesi* are identical to males in plumage, and also show no trace of the bright rufous nuchal collar which is very conspicuous in the closely related Black-capped Foliage gleaner *Philydor atricapillus* from southeastern Brazil (Teixeira & Gonzaga 1983). As was observed with males, the females of *P. novaesi* are larger than specimens of *P. atricapillus* of the same sex, averaging culmen 18.2 mm, wing 93.4 mm, tail 85.6 mm. In comparison, a series of 68 females of *P. atricapillus* average culmen 15.7 mm, wing 82.1 mm and tail 75.0 mm.

WHITE-BROWED PURPLETUFT *Iodopleura isabellae*

Only recorded from the Amazonian drainage (Snow 1982), this species also occurs in northeastern Brazil, where we observed a nesting pair in the highland forests of Serra Branca, municipality of Murici, Alagoas on 10 May 1984. The nest was collected and agrees with the description made by Sick (1979), but it was impossible to obtain ornithological specimens. With its arboreal habits and small size, *I. isabellae* is difficult to observe in the forests of northeastern Brazil, which perhaps could explain the lack of records of this Amazonian bird in the lowland forests of the region (cf. Teixeira *et al.* 1986). It is also appropriate to mention here that *Iodopleura pipra leucopygia*, an enigmatic Cotingidae apparently known only from 2 specimens obtained by Whitely in the last century, has a doubtful distribution, since this collector worked in both British Guiana and northeastern Brazil.

MAGPIE TANAGER *Cissopis leveriana*

The northeastern Brazilian population of the Magpie Tanager is identified usually as *C. leveriana major;* it also occurs from Bahia and Goiás south to Rio Grande do Sul (Hellmayr 1936, Pinto 1944, Sick 1985). In recent years, however, we have observed and collected specimens of this Thraupid from northeastern Brazil which obviously should be attributed to *C. leveriana leveriana* from Amazonia, distinguishable from *C. leveriana major* by its smaller size and the plain white back. On 24 February 1986, we obtained an adult female (MN 34562, gonad 9 mm, 69 g, 325 mm total length) from Matriz de Camaragibe (c. 9°10′S, 35°32′W), coastal Alagoas, which had a conspicuously plain white back, with the wing measuring only 103 mm and the tail 134 mm. This seems to be one more example of an Amazonian bird which also occurs in the lowland forests of northeastern Brazil (cf. Teixeira *et al.* 1986).

COMMON WAXBILL *Estrilda astrild*

Introduced from Africa in about the 18th century, the Common Waxbill has a very local distribution in Brazil, inhabiting man-made landscapes, especially where some species of exotic African Graminae also occur (Sick 1985). In northeastern Brazil, *E. astrild* has apparently been recorded only from Recife, but we discovered a second established population in Guaramiranga, Serra de Baturité, Ceará. According to local informants, the Common Waxbill was introduced into this locality in 1971 by the Capushin prior in Ceará, who obtained cage specimens from "a southern State". Nowadays it is a rather common species in the environs of Guaramiranga, where the House Sparrow *Passer domesticus*, another introduced bird, also occurs.

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Clinal variation and subspeciation in the White-crowned Black Wheatear *Oenanthe leucopyga*

by Alan Tye

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The type specimen of the White-crowned Black Wheatear *Oenanthe leucopyga* (C. L. Brehm, 1855) was collected at Korosko, Egypt, a locality now submerged in Lake Nasser (22°40′N, 32°20′E). Hartert (1913) later described a race *O.l. aegra* (type from Algeria) on the basis of smaller size. Meinertzhagen (1930) claimed that no size difference existed between nominate and *aegra* and suppressed the latter, but at the same time he described a new subspecies, *O.l. ernesti*, from Sinai and Palestine (type from Sinai) distinguished by a longer bill and bluer, glossier plumage. Meinertzhagen's arrangement has been generally followed since, though most authors (e.g. Vaurie 1959, White 1962) have pointed out that *ernesti* is not clearly separated, but intergrades with nominate in Egypt. Vaurie (1959) also suggested that *ernesti* had larger, darker spots near the tips to the outer rectrices.

In the present paper I examine clinal variation in size, colouration and tail pattern in this species, and the implications of such variation for subspecific nomenclature. The results presented here refer to specimens at the British Museum (Natural History).

Distribution

For the purpose of analysing clinal variation I divided the species' range into 9 populations, some of which correspond with natural 'gaps' in the range (Fig. 1), where the habitat is unsuitable for breeding, or where the species seems to be either absent or present at very low densities. Such gaps occur in the western Egyptian desert (between populations 2 and 3), the Gulf of Suez (between 3 and 4), highland Eritrea (between 6 and 7), lowland western Sudan (between 6 and 8: cf. Lynes 1925) and lowland Sahara (between 8 and 9, 9 and 1/2). In addition, population 9 consists of several sub-populations on each of the central Saharan massifs, separated

from one another by lower, flatter, sandier country, where the species does not breed.

Size

Clinal variation in size is shown in Figs. 2 and 3 and the Appendix. Trends are generally clearer for males, of which I was able to examine larger samples. In general, size increases from west to east across north Africa and into Arabia. Size decreases southwards through northeast Africa from Egypt to eastern Sudan, and decreases further from eastern Sudan westward through the Sahara (compare Figs. 2 and 3 with Fig. 1). The largest birds are found in Arabia and the smallest in northwest Africa and the central Sahara. This pattern applies to wing, tail and bill measurements. In contrast, the trends in tarsal length are a mirror image of these, with Arabian birds having some of the shortest tarsi. The sample from Eritrea/ Djibouti (population 7) comprised only 5 males and 2 females, and few conclusions can be drawn from it.

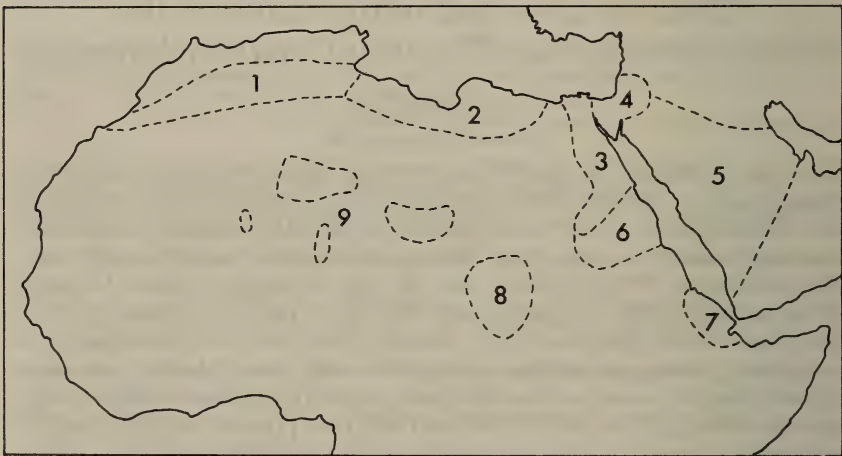

Figure 1. The breeding range of the White-crowned Black Wheatear *Oenanthe leucopyga*. Populations: 1. Northwest Africa; 2. Libya & northwest Egyptian oases; 3. Egypt and north Sudan Nile Valley; 4. Sinai, Israel & Jordan; 5. Arabia; 6. Eastern Sudan, including Jebel Elba; 7. Eritrea (Danakil) & Djibouti; 8. Darfur, including east Chad; 9. Central Saharan massifs.

Plumage

Plumage differences are a matter of degree. In general, the black areas of the plumage of birds from populations 1, 2, 8 and 9 are dull, while in most individuals of populations 4 and 5 they have a pronounced glossy blue sheen. The other populations are intermediate, with some dull individuals, some very glossy and others in between. These differences apply when individuals in comparable stages of plumage wear are compared, though plumage colours are not greatly affected by wear.

Vaurie (1959) wrote that the "black spots on tips of outer rectrices" were "larger and deeper black, longer on outer web" in *ernesti*. In fact, the amount of brown in the tail is very variable in all populations. Variation occurs in 4 ways: 1) the number of rectrices having brown spots at the tips,

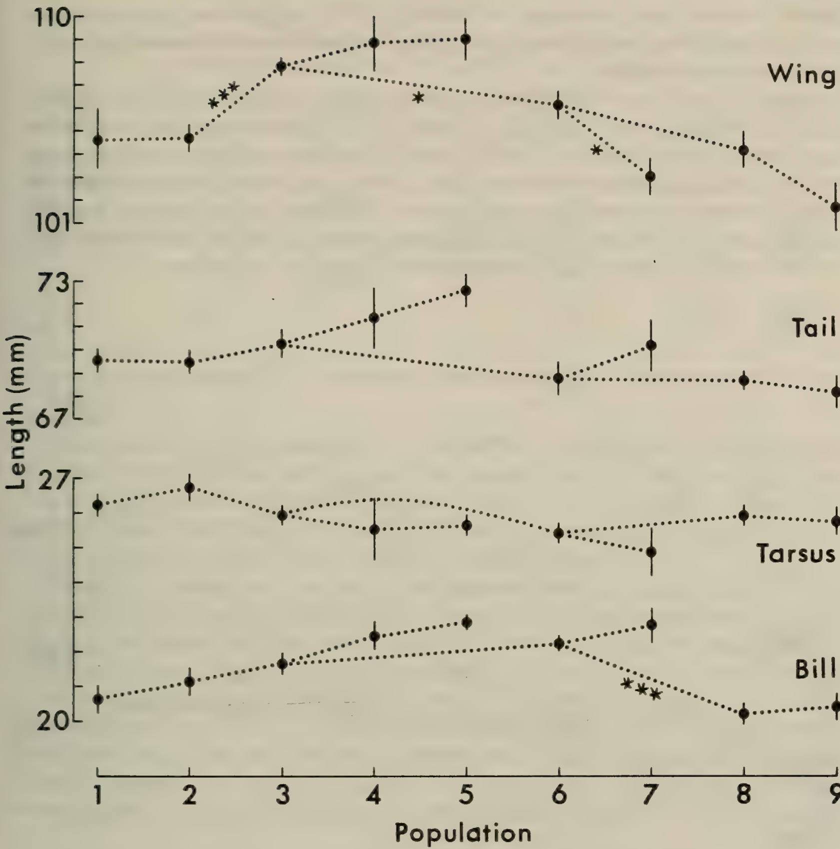

Figure 2. Clinal variation in size of male White-crowned Black Wheatears *Oenanthe leucopyga*. Numbers below the abscissa refer to the populations in Fig. 1. Dotted lines link geographically-adjacent populations; bars show mean±1SE. Statistically-significant differences in size between adjacent populations are shown by asterisks: *P<0.05, **P<0.01, ***P<0.001 (2-tailed t-tests). Full data for Figs. 2 & 3, plus ranges of variation and sample sizes, are given in the Appendix.

2) whether the brown is present on one or both webs, 3) whether the brown is smudgy or solid, 4) the size of the brown spots. I examined each of these possibilities, ignoring the central pair of tail feathers, which carries a consistently large area of brown.

The number of rectrices with brown spots near the tips can vary from 1 to 5 (on each side), ignoring the brown central pair. Where the 2 sides of a bird's tail differed, I took the larger figure. Nearly all populations showed a bimodal distribution of this attribute, peaking at 2 (with rectrices 2 and 6, numbering centrifugally, having brown spots) and 5 (all (2-6) having brown spots). Because of this, and the relatively small samples, I grouped the data into birds with 0-2 rectrices having spots and 3-5 having spots.

Table 1 shows that, contrary to Vaurie's (1959) suggestion, populations 4 and 5 (*ernesti*) have a higher proportion of individuals with fewer spots; i.e. they have whiter tails.

Rectrices with spots can have a mark on one or both webs. When scoring for this character, I scored a tail as 'both' if the mark spread onto both webs in at least one tail feather. Table 2 shows that this attribute is rather more variable, with different patterns in the 2 sexes, suggesting that there are few real differences between the populations. However, in both sexes, western populations 1, 2, 8 and 9 have a high proportion of individuals with brown on both webs, which is again contrary to Vaurie's suggestion.

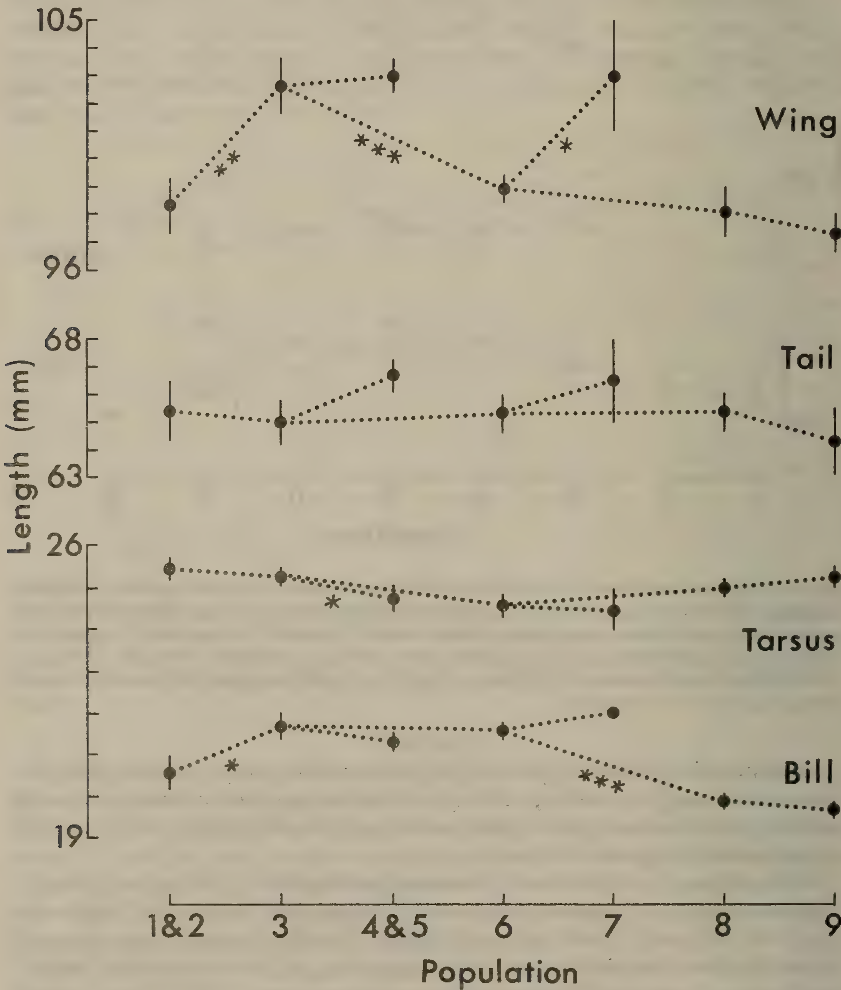

Figure 3. Clinal variation in size of female White-crowned Black Wheatears *Oenanthe leucopyga*. Symbols as in Fig. 2.

TABLE 1

Number of outer tail-feathers with brown spots in *Oenanthe leucopyga* populations (see text and Fig. 1). Figures in brackets are percentages

No. with spots	Populations 1	2	8	9	3	6	7	4	5	western 1, 2, 8, 9	central 3, 6, 7	eastern 4, 5
					Males							
0–2:	7	3	1	0	7	3	0	2	6	11 (31)	10 (28)	8 (47)
3–5:	3	6	10	6	4	17	5	3	6	25 (69)	26 (72)	9 (53)
					Females							
0–2:	2	0	0	0	4	2	0	0	5	2 (9)	6 (21)	5 (50)
3–5:	6	1	10	3	7	13	2	1	4	20 (91)	22 (79)	5 (50)

X^2 tests for populations 4 & 5 (= *ernesti*) *vs* the rest: males X_1^2=1.27, N.S.; females X_1^2=3.85, P<0.05.

I scored tail spots as smudgy or solid brown subjectively, weighting the decision towards the pattern on the outermost pair of feathers. This character shows no coherent pattern, except that population 7 has consistently very dark tails (Table 2). This is also inconsistent with Vaurie's suggestion that *ernesti* has tail spots of a deeper shade.

Finally, I measured the length of brown parallel to the shaft on the outermost tail feather (taking the greater of the measurements on the 2 sides) as an index of spot size (Table 3). Probably owing to small sample sizes and great intra-population variability, there is again inconsistency between the patterns shown by the 2 sexes. However, it is clear that eastern populations 4 and 5 do not have consistently longer brown marks on the rectrices than other populations, contrary to Vaurie's suggestion. The only clear difference to appear in Table 3 is that birds of population 7 have exceptionally large spots, often covering half or more of the outer tail

TABLE 2

Brown spots (a) on one or both webs of tail-feathers, (b) smudgy or solid brown, in *Oenanthe leucopyga* populations (see text and Fig. 1). Figures in brackets are percentages

	Populations 1	2	8	9	3	6	7	4	5	western 1, 2, 8, 9	central 3, 6, 7	eastern 4, 5
					Males							
a) on both webs	3	5	7	5	3	7	1	3	5	20 (56)	11 (31)	8 (47)
on one web	7	4	4	1	8	13	4	2	7	16 (44)	25 (69)	9 (53)
					Females							
on both webs	5	0	10	2	5	11	1	0	1	17 (77)	17 (59)	1 (10)
on one web	3	1	0	1	7	4	1	1	8	5 (23)	12 (41)	9 (90)
					Males							
b) smudgy	9	8	6	4	8	14	0	3	5	27 (75)	22 (63)	8 (47)
solid brown	1	1	5	2	3	6	5	2	7	9 (25)	13 (37)	9 (53)
					Females							
smudgy	6	1	3	1	9	9	0	1	7	11 (50)	18 (62)	8 (80)
solid brown	2	0	7	2	3	6	2	0	2	11 (50)	11 (38)	2 (20)

TABLE 3

Length of brown spot (mm) parallel to shaft on outermost tail-feather in *Oenanthe leucopyga* populations (see text and Fig. 1).

	Males				Females			
Population	Range	Median	Mean	n	Range	Median	Mean	n
1	0–10	5.5	5.0	10	0–12	7.5	6.0	8
2	0–11	4	4.6	9	6	6	6	1
8	6–17	13	12.5	11	9–22	14	14.9	10
9	5–12	7.5	7.8	6	5–16	11	10.7	3
3	0–14	5	5.4	10	2–21	6	10.8	12
6	4–17	7	7.9	20	0–19	14	12.5	15
7	21–51	27	33.8	5	31–33	32	32.0	2
4	3–18	10	11.0	5	6	6	6	1
5	4–19	12	11.1	12	0–15	6.5	7.2	9
1, 2, 8, 9	0–17	8	7.7±0.8	36	0–22	10	10.7±1.3	22
3, 6, 7	0–51	7	10.9±1.9	35	0–33	13	13.1±1.4	29
4, 5	3–19	10	11.1±1.2	17	0–15	6.5	7.1±1.4	10

feather. Indeed, there is no overlap between the range for the admittedly small samples from this population and the ranges of any of the others.

To summarise tail pattern: eastern (*ernesti*) populations do not have more brown on the tail than other populations, if anything, they have less. Population 7 stands out as having more tail feathers spotted, the spots darker brown and much larger than in any other population.

Subspeciation

The patterns discussed above reveal a central area, in Egypt, containing birds of intermediate characteristics, with smaller, duller birds to the south and west and larger, glossier birds to the northeast and east. This does not necessarily imply an Egyptian centre of origin for the species. These results confirm Hartert's (1913) findings of a size difference between western and Egyptian populations. In addition, they reveal an opposite trend in tarsal length from the trends in other measurements, which does not appear to have been noticed before.

The clines in size and plumage colouration do not show any obvious steps which could be used to divide the species sensibly into subspecies (except possibly in western Egypt), and the variation in tail pattern is not sufficiently clearly related to geographical distribution to allow subspecies to be based upon it, except possibly in the case of population 7. However, the natural gaps in the species range, which break the clines in size and plumage colour, permit the 9 populations to be grouped into 3 clusters.

First, populations 1, 2, 8 and 9 contain small, dull birds with long tarsi. Although it may appear from their distribution (Fig. 1) that 2 or more gene pools may exist here (e.g. 1/2 and 8/9), genetic exchange may occur if birds from the partially migratory northern populations winter in the central Sahara and remain there to breed. Such exchange must, however, be limited, as the central Saharan population 9 is smaller in size than the north African populations 1/2 (see Appendix), significantly so (t_{23}=2.660,

$P<0.02$) in male wing-length. I was unfortunately unable to examine any specimens from the small breeding population in the Atar region of northern Mauritania, but measurements given by Dekeyser and Villiers (Dekeyser & Villiers 1950, Dekeyser 1954) place it firmly within this group and not, as suggested by these authors, with populations 3, 6 and 7 (8 males: wing 100.4±0.8, range 97–104; tarsus 24.8±0.7, range 22–28. 5 females: wing 98.0±1.9, range 92–102; tarsus 25.0±0.4, range 24–26 mm).

Although the geographical distance between populations 2 and 3 is small, there does seem to be a minor faunal barrier here, in the western Egyptian desert, where the ranges of several other taxa (including several wheatear *Oenanthe* spp or subspp) stop. The distance between populations 6 and 8 is greater, and its effectiveness as a barrier has been remarked upon by Lynes (1925). Hence populations 1, 2, 8 and 9 would seem to form a well-defined, rather isolated group of interlinked populations, having similar characteristics and being morphologically distinguishable from populations further east.

The second group of populations comprises 3, 6 and 7. Populations 3 and 6 are not well-separated from each other geographically, being linked in the upper Nile Valley and northeast Sudan. However population 7 is separated from 6 by highland Eritrea and appears to have diverged markedly in tail pattern and, to a certain extent, in morphology. It is included with populations 3 and 6 primarily for convenience. This group of populations is the most variable, even if population 7 is excluded from it, with individual birds having characteristics typical of each of the other 2 groups: this applies both to measurements and plumage characters.

The third and final group consists of populations 4 and 5. The main part of population 5 inhabits northern Saudi Arabia, with outliers in the east and south of the Arabian peninsula. There is no real geographical gap between populations 4 and 5, which seem morphologically indistinguishable from one another and form a homogeneous group.

Nomenclature

Brehm's type specimen was a member of population 3, an intermediate. The results presented above show that there are equally good grounds for distinguishing from the type Hartert's race *O.l. aegra* from northwest Africa, the central Sahara and Darfur (Lynes 1925), as there are for Meinertzhagen's race *O.l. ernesti* from Sinai, Palestine and Arabia. Since the type refers to an intermediate population and is, in fact, of an intermediate character (Vaurie 1959), the nominate subspecies could be taken to include either end of the range, or it could be restricted to intermediate populations alone. In view of this, Hartert's publication of the name *O.l. aegra* for a population which is recognizably different from the Egyptian (nominate) populations, would have the effect of restricting the nominate to either the intermediate population alone (i.e. 3, 6, 7), or to the entire population other than populations referrable to *aegra* (i.e. 3, 6, 7, 4, 5).

Meinertzhagen (1930), when stating his belief that there was no difference in size between western and Egyptian birds, in effect recognised

TABLE 4

Possible schemes for the subspecific nomenclature of *Oenanthe leucopyga*. Numbers refer to the populations in Fig. 1.

Scheme	*O.l. aegra*	*O.l. leucopyga*	*O.l. ernesti*
a)	1 2 8 9	3 6 7	4 5
b)	suppress	1 2 8 9 3 6 7 4 5	suppress
c) Hartert	1 2 8 9	3 6 7 4 5	suppress
d) Meinertzhagen	suppress	1 2 8 9 3 6 7	3 6 7 4 5

that there was. He referred to the western birds as nominate *leucopyga,* but on erecting his name *ernesti* for eastern birds he stated that Egyptian birds were *intermediate* between *ernesti* and western birds. That is, he recognized, implicitly, that Hartert was correct in differentiating western birds from Egyptian nominates. Hence, Meinertzhagen's action in suppressing a name for one end of the cline, while erecting a name for the other end seems perverse or, at least, illogical. His referral of all African populations to *O.l leucopyga* also obscures the range of variation which exists in Africa.

Of the possible schemes for subspecific nomenclature (Table 4), that of Meinertzhagen (scheme d) applying *O.l. leucopyga* to African populations and *O.l. ernesti* to Middle Eastern, with populations 3, 6 and 7 recognized as 'intermediates', seems inadmissible because *O.l. aegra* has priority over *O.l. ernesti* and if only one of these 2 races be recognised, it should be the first, since both have otherwise equal claims.

We are left with possibilities a, b and c. Although c (Hartert's) is logically correct, its re-adoption could lead to confusion and further

APPENDIX

Morphometrics of *Oenanthe leucopyga*. Populations numbered as in Fig. 1. Data are in the form: $\bar{x} \pm 1$ SE (n) range.

Population	Wing	Tail	Bill	Tarsus
Males				
1	104.6±0.9 (10) 99–108	69.6±0.5 (10) 67–72	20.6±0.4 (7) 19–21	26.2±0.3 (10) 25–28
2	104.7±0.6 (9) 102–107	69.5±0.5 (8) 67–71	21.1±0.4 (9) 19–22	26.7±0.4 (9) 24–28
3	107.8±0.4 (11) 106–110	70.3±0.6 (11) 67–73	21.6±0.3 (10) 20–24	25.9±0.3 (11) 24–27
4	108.8±1.2 (5) 106–112	71.4±1.3 (5) 68–75	22.4±0.4 (5) 21–23	25.5±0.9 (4) 23–27
5	109.0±0.9 (11) 105–115	72.6±0.7 (12) 68–76	22.8±0.2 (12) 22–24	25.6±0.3 (11) 24–27
6	106.1±0.6 (19) 103–112	68.8±0.7 (19) 64–76	22.2±0.2 (18) 20–24	25.4±0.3 (18) 23–28
7	103.0±0.8 (5) 101–106	70.2±1.1 (5) 66–72	22.7±0.5 (4) 22–24	24.8±0.7 (5) 23–27
8	104.2±0.8 (10) 100–107	68.7±0.4 (10) 67–71	20.2±0.3 (9) 19–21	25.9±0.3 (10) 24–27
9	101.7±1.0 (6) 97–104	68.2±0.7 (6) 65–70	20.4±0.4 (5) 19–21	25.7±0.4 (6) 24–27
Females				
1	98.9±1.0 (8) 96–103	65.4±1.1 (8) 62–70	20.5±0.4 (8) 19–23	25.4±0.3 (8) 24–26
2	94 (1)	(0)	21 (1)	24 (1)
3	102.6±1.0 (12) 100–108	65.0±0.8 (11) 62–69	21.7±0.3 (10) 20–23	25.3±0.2 (11) 24–26
4	101 (1)	65 (1)	20 (1)	27 (1)
5	103.2±0.6 (9) 101–106	66.9±0.6 (10) 65–70	21.4±0.2 (10) 20–22	24.6±0.2 (10) 24–26
6	98.9±0.5 (15) 95–103	65.3±0.7 (15) 62–71	21.6±0.2 (15) 21–23	24.6±0.3 (14) 23–27
7	103.0±2.0 (2) 101, 105	66.5±1.5 (2) 65, 68	22.0 (2) 22, 22	24.5±0.5 (2) 24, 25
8	98.1±0.9 (9) 92–101	65.4±0.7 (9) 62–69	19.9±0.2 (9) 19–21	25.0±0.2 (9) 24–26
9	97.3±0.7 (3) 96, 98, 98	64.3±1.2 (3) 62, 65, 66	19.7±0.3 (3) 19, 20, 20	25.3±0.3 (3) 25, 25, 26

pointless nomenclatural discussion. My inclination with indistinct subspecies and clinal variation is to favour the suppression of all names for subspecies which are simply ends of a cline, while recognizing that variation exists, i.e. scheme b. However, the existing names will undoubtedly continue to be used to describe the various morphs. Hence, as subspecific names have been published, both of which describe recognizable populations, and since the type of the species belongs to an intermediate population, it may be safest to continue to use all 3 names, restricting the nominate to populations 3, 6 and 7 as in scheme a, or only to 3 and 6.

The above examination of tail pattern and morphometrics reveals that the previously-described subspecies are rather poorly-differentiated, though recognizable. I hesitate to complicate the nomenclatural situation further by pointing out that population 7 seems one of the best-differentiated, as well as being geographically isolated and that it, if any, deserves glorification with its own name.

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Notes on the birds of Buton (Indonesia, southeast Sulawesi)

by J. W. Schoorl

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The author stayed on the island of Buton (Butung) 19 July–4 August 1981 and made observations on its birds. The most recent publication on the birds of Buton and Muna at that time was by van Bemmel & Voous (1951), who give a survey of the records from the literature and from collections. For this work G. A. L. den Haan collected on Buton and Muna in September and October 1948. van Bemmel & Voous also give an account of the zoogeography and a short description of the vegetation and geology of

these islands. New data were published by White & Bruce (1986). However, many species I recorded are not recorded for the avifauna of Buton in the works cited and are given here.

Trips were made daily from the capital Bau-Bau to areas between Kolagana, Labunka and Bataoga. In the lower levels of this area there are many arid fields with tall grass, 'alang-alang', and sparsely distributed bushes and trees. Moderately large sections of the valley near Karing-Karing (indicated below as "K.-K.") had been recently transformed into wet paddy fields. Most hills had more or less developed secondary forest, but the area between Badia and Labunka was mostly of a dry savanna character. A forest with quite tall trees and a well-developed undercover was found along a river near Bungi.

The species new for Buton and not recorded from Muna are indicated* and those already recorded on Muna and new for Buton only are indicated†. Nomenclature and sequence follow White & Bruce (1986).

*LITTLE BLACK CORMORANT *Phalacrocorax sulcirostris.* On several occasions one was flying near the harbour of Bau-Bau.

*GREAT FRIGATEBIRD *Fregata minor.* One definite adult male flying low over land north of Bataoga, 25 July, but many other records of frigatebirds have remained unidentified.

*LESSER FRIGATEBIRD *Fregata ariel.* One adult male seen between Bau-Bau and Palau Makassar, 26 July.

*CINNAMON BITTERN *Ixobrychus cinnamomeus.* A male in bushy marshland along a stream near K.-K., 27 July.

†LITTLE EGRET *Egretta garzetta.* Several small groups in rice cultivation near K.-K., 27 July.

*SHORT-BILLED EGRET *Egretta intermedia.* Several on the paddy fields near K.-K., 27 July.

†GREAT-BILLED HERON *Ardea sumatrana.* One fishing on the coast of Pulau Makassar at dawn and later in the morning flying over the bay and landing near Bungi, 19 July.

*PURPLE HERON *Ardea purpurea.* One on the paddy fields near K.-K., 27 July.

*GLOSSY IBIS *Plegadis falcinellus.* One in a marshland near K.-K., 27 July.

†BARRED HONEY-BUZZARD *Pernis celebensis.* One flying between Badia and Labunka, 22 July.

†BLACK-SHOULDERED KITE *Elanus caeruleus.* One carrying twigs in its bill near Labunka, 22 July.

*SPOTTED HARRIER *Circus assimilis.* A male hunting above an alang-alang field west of Badia, 19 July.

*LESSER FISH-EAGLE *Ichthyophaga humilis.* One at a wood margin south of K.-K., 27 July.

*BLACK EAGLE *Ictinaetus malayensis.* One flying south of K.-K., 27 July.

*ORIENTAL HOBBY *Falco severus.* One flying between Badia and Liabunka, 22 July.

*GREAT CRESTED TERN *Sterna bergii.* More than 20 flying along the coast near Bungi, 20 July, together with smaller terns, probably Whiskered Terns *Chlidonias hybridus.*

†UNIFORM SWIFTLET *Aerodramus vanikorensis.* Swiftlets were common and most probably belonged to this species.

*RAINBOW BEE-EATER *Merops ornatus.* Small groups of this migrant from Australia were regularly seen along the coast and in savannah areas in the hills.

*SULAWESI PYGMY WOODPECKER *Picoides temmincki.* A pair west of Badia, 22 July.

†SULAWESI CICADABIRD *Coracina morio.* A pair east of Badia, 21 July.

†PIED TRILLER *Lalage nigra.* One in a bush east of Badia, 21 July.

*GOLDEN-HEADED CISTICOLA *Cisticola exilis.* A male singing in a marshland bush north of K.-K., 27 July.

Other species, more or less regularly recorded, were: *Egretta sacra, Ciconia episcopus, Haliastur indus, Haliaeetus leucogaster, Spizaetus lanceolatus, Falco moluccensis, Pluvialis fulva, Actitis hypoleucos, Ducula luctuosa, Macropygia amboinensis, Cacatua sulphurea, Centropus bengalensis, Phaenicophaeus calorhynchus, Hemiprocne longipennis, Halcyon chloris, H. melanorhyncha, Hirundo tahitica, Coracina leucopygia, Lalage sueurii, Saxicola caprata, Trichastoma celebensis, Cisticola juncidis, Artamus leucorhynchus, Streptocitta albicollis, Anthreptes malacensis, Nectarina jugularis, N. sericea, Zosterops chloris, Lonchura malacca, Dicrurus hottentottus, Oriolus chinensis, Corvus enca* and *Aplonis minor.*

Later in August a specimen of *Scissirostrum dubium* was found dead at Bau-Bau by the author's father. According to local information from various people a group of pelicans, "Buru Australis" and recognized from an illustration, regularly visited the coast near Bungi in the evening. Hornbills were said to have become scarce in this area because of human disturbance. Catching and trading of birds in general occurred, but probably on a small scale only.

In total, 15 species not seen on Buton and Muna previously were recorded for the first time from Buton. Of these, 4 species of herons and an ibis were seen on the paddy fields near Karing-Karing, apparently a recent phenomenon for this area. The seabirds have probably been overlooked in the past. Various other newly recorded species, such as *Pernis celebensis* and *Falco severus,* may also have been overlooked previously. *Circus assimilis* and *Cisticola exilis,* birds of "the grassland route" (Stresemann 1939), may have expanded in relation to an increase in number and size of open habitats with grass vegetation, resulting from (earlier) human activities. Finally 7 species new for Buton were already known from the neighbouring island Muna and could thus have been expected on Buton.

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Fossil birds in the British Museum: corrections to Lydekker's (1891) catalogue

by P. R. Millener

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In 1846-47, while in New Zealand as Government Commissioner for the settlement of native land claims, the Honourable W. B. D. Mantell, son of the renowned scientist Sir Gideon A. Mantell, acquired a large collection of sub-fossil bird bones, many of them from the dune sands of the South Taranaki-Wanganui region on the North Island's west coast. This material, as was typical of collections of that period, was shipped to England to be studied by the famed palaeontologist Sir Richard Owen, K.C.B. and later (c. 1855) purchased by the British Museum of Natural History (BMNH). Subsequently, much of it was incorporated into Lydekker's (1891) 'Catalogue of the fossil birds in the British Museum (Natural History)', a volume which, to date, remains the only comprehensive, published listing of that institution's subfossil avian material.

The first specimen to be discussed in this corrective note is the left tarsometatarsus of a small kiwi (Apterygidae) in the Walter Mantell collection (BMNH 32237a), illustrated and described by Lydekker (1891: 217-19). Its locality is given by Lydekker (1891: 219) only as "New Zealand", but it seems most probable that it was collected from the Holocene dune sands of Waingongoro, South Taranaki. Buick (1931) chronicled Mantell's collecting expeditions and reported that nearly all of his specimens were obtained from just 2 sources, firstly the dune sands on the South Taranaki coast, and secondly from swamp deposits at Waikouaiti in the South Island. BMNH 32237a exhibits the pale, yellow-brown colour, light weight and somewhat weathered appearance typical of subfossil bones from sand dune deposits, rather than the dark-brown, iron-stained appearance evident in bones from humic swamp deposits such as Waikouaiti.

Lydekker (1891: 218) erected a new genus, *Pseudapteryx*, for this specimen, thus making BMNH 32237a the unique holotype of *P. gracilis*. Lambrecht (1933: 227) and Brodkorb (1963: 219) accepted the validity of this species, but Oliver (1955: 47) only cited, without comment, Lydekker's original description. Kinsky *et al.* (1970) and Scarlett (1972) apparently disregarded *Pseudapteryx* despite there having been no formal rejection of the name.

Reid & Williams (1975: 307), following Storer (1960), regarded *Pseudapteryx* as "the earliest known kiwi", but the basis for such a claim seems tenuous, as Lydekker (1891: 219) stated that the specimen came from a "superficial deposit". If indeed, as argued above, it came from the Waingongoro sand dunes it is almost certainly no older than late Holocene (see Millener 1981: 458).

BMNH 32237a most closely resembles in size and shape the tarsometatarsus of *Apteryx owenii* (Little Grey Kiwi) and I consider, as will be shown, that the maintenance of *Pseudapteryx gracilis* as a distinct taxon is untenable and the name should become a junior synonym of *Apteryx owenii* Gould, 1847. BMNH 32237a was compared with recent and subfossil material of all 3 accepted species of kiwi – *Apteryx australis* Shaw & Nodder, 1913, *A. haasti* Potts, 1871 and *A. owenii* Gould, 1847 – in the collections of the National Museum (Wellington) (NMNZ) and the Smithsonian Institution (Washington, D.C.) (NMNH). In Fig. 1, 2 specimens of *Apteryx owenii* (NMNH 18279, NMNZ 22535) are illustrated for comparison with *Pseudapteryx gracilis* (cast of BMNH 32237a).

In the type description of his new genus *Pseudapteryx*, Lydekker (1891: 218) listed 3 characters which he considered were distinctive enough to warrant its separation from *Apteryx* (osteological terminology follows Baumel 1979).

(1) "The outer foramen [foramen vasculare proximale lateralis], above the tubercle for the tibialis anticus [tuberositas m. tib. cranialis] is placed on a much lower level than the inner one [f.v.p. medialis]" in contrast to what he considered (p. 216) was the typical condition in *Apteryx,* with 2 foramina "situated . . . on the same horizontal line".

The position and even the number of such foramina exhibits considerable intraspecific variation in several avian groups, penguins (Spheniscidae), moas (Dinornithidae) and the kiwis (Apterygidae) themselves providing just some of the many documented examples. Examination of *Apteryx* tarsometatarsi in the National Museum collections, as well as a more limited series at the Smithsonian Institution, revealed several specimens with 2 foramina positioned exactly as in *Pseudapteryx* (e.g. NMNH 18279, Fig. 1b), others with 3 foramina, 2 medial and one lateral (e.g. NMNZ 22535, Fig. 1c). Further, in some of those with 3 foramina, the more distal medial foramen was partially or completely occluded, the resultant condition closely approximating that in *Pseudapteryx.* Clearly, neither the number nor the relative positions of these proximal foramina can be considered reliable criteria for generic or specific distinction.

(2) "There is no depression [sulcus extensorius] on the anterior surface [facies dorsalis] of the shaft." This statement, applied to *Pseudapteryx,* is not strictly accurate, since BMNH 32237a does have a distinct sulcus on the proximal dorsal surface. As with (1) above, the size and shape of this sulcus varies considerably among individuals, several in the Smithsonian series (e.g. NMNH 18279, Fig. 1b) exhibiting a sulcus comparable in size to, or only marginally more extensive than that in *Pseudapteryx.*

(3) "There is no foramen [foramen vasculare distale] in the groove

Figure 1. Left tarsometatarsi of (a) "*Pseudapteryx gracilis*" (cast of holotype BMNH 32237a) = *Apteryx owenii*; (b) *A. owenii* NMNH 18279; (c) *A. owenii* NMNZ 22535. Each scale division = 1 mm.

Figure 2. Left tibiotarsi of (a) *Heterolocha acutirostris* NMNZ 15087; (b) "*H. acutirostris*" BMNH 32171 = *Palaeocorax moriorum*; (c) *P. moriorum* AU 6120.

between the third and fourth trochleae [incisura intertrochlearis lateralis], but a distinct channel above this groove." The absence of this foramen in BMNH 32237a can be explained by one or more considerations. As with the proximal foramina, in several avian taxa the distal foramina of the tarsometatarsus exhibit considerable individual variability in position and may sometimes be absent. Archey (1941), Oliver (1949) and Scarlett (1972) have all remarked on such variability in the tarsometatarsi of moas and it is readily seen, on examination of a series of kiwi tarsometatarsi, that the same applies in this latter, related group. Typically the tendinal/vascular canal penetrates the distal shaft completely via foramina on the dorsal and plantar surfaces and in some specimens (e.g. NMNH 18279, NMNZ 22535, Fig. 1b, c) a branch [canalis interosseus tendineus] from this canal leads distally to a third foramen opening between the third and fourth trochleae. By contrast, in several examples, no sign of any distal foramina could be seen, a feature apparently comparable to that in BMNH 32237a.

A second consideration is the unusually deep gap between the third and fourth trochleae [incisura intertrochlearis lateralis] (see Fig. 1a). The slender shaft, flaring sharply to both the proximal extremity and the distal trochleae suggests that BMNH 32237a is from a somewhat subadult individual, in which case the gap between the third and fourth trochleae, and the absence of a distal foramen may be, in part, the result of incomplete fusion. Close examination of BMNH 32237a further reveals that, whether or not a distal foramen was ever present, bone bridging the basal portions of the third and fourth trochleae appears to have been eroded away, leading to the enlargement of the gap between them. The "distinct channel" on the dorsal surface of BMNH 32237a may be related to the subadult nature of this specimen (marking the line of fusion of the third and fourth embryonic metatarsals), but in any case is not a feature unique to *Pseudapteryx*. A subfossil specimen of *Apteryx owenii* (AU 4716 – Fig. 174 *in* Millener 1981: 506) clearly exhibits just such a channel, as do several specimens in the Smithsonian series (e.g. NMNH 18279, Fig. 1b).

In summary, since none of the characters used by Lydekker to differentiate *Pseudapteryx* from *Apteryx* is unique to the former, and none exceeds the range of individual variation shown by even a small series of *Apteryx* specimens, *Pseudapteryx* should be considered simply a junior synonym of *Apteryx*. Further, since BMNH 32237a exhibits no significant differences in size or shape from *Apteryx owenii,* even specific separation (as *gracilis*) is no longer warranted.

The second specimen considered in this corrective note is a passerine left tibiotarsus (BMNH 32171 – Fig. 2b) in Mantell's collection which is, in this case, clearly labelled as being from Waingongoro. This specimen, complete distally, but with its proximal end worn and mid-shaft somewhat imperfectly restored after post-mortem damage, was illustrated (Fig. 1, p. 5) and identified in Lydekker's (1891) Catalogue as that of a huia, *Heterolocha acutirostris* (Callaeidae).

BMNH 32171 was compared with material from the collections of the NMNZ and the Auckland University Geology Department (Auckland), the critical specimens being the following: *Heterolocha acutirostris,*

NMNZ 15087 (recent skeleton – from a mummified corpse) and AU 6794 (subfossil partial skeleton – from Holocene cave deposits, Waitomo, North Island); *Palaeocorax moriorum*, AU 6120 (subfossil skeleton – from Holocene dune sands, Tokerau Beach, North Island) and NMNZS 962 (subfossil skeleton – from Holocene dune sands, Chatham Island).

It is clearly evident from Fig. 2 that BMNH 32171 (2b) is, in fact, correctly referable not to *Heterolocha* (2a), but to *Palaeocorax moriorum* (Corvidae) (2c), the extinct New Zealand crow. The features in which the tibiotarsus of *Palaeocorax* differs most significantly from that of *Heterolocha* (Fig. 2a) [and agrees with BMNH 32171] are: the straighter and stouter shaft; the less pronounced flare of the internal lateral ridge below the cnemial crest [crista cnemialis cranialis]; the relatively larger, more circular (in lateral aspect) and less flared distal condyles [epicondyli distalis]; the broader and deeper tendinal groove [sulcus extensorius]; and the less robust tendinal bridge [pons supratendineus].

The original misidentification of BMNH 32171 becomes more understandable when it is realised that at the time Lydekker's Catalogue was published the genus *Palaeocorax* Forbes, 1892 had yet to be described, and *Heterolocha* was then the largest passerine known in the New Zealand fauna.

Acknowledgements: I am much indebted to Dr Cyril Walker (BMNH), Sandy Bartle and Noel Hyde (NMNZ) and Dr Storrs Olson (NMNH) for arranging loans of specimens. I also thank Vic Krantz (NMNH Photographic Unit) for producing Figure 2 and Dolores Frost (Foxcroft School) for typing the manuscript.

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Subspeciation in the Afrotropical Gabar Goshawk *Micronisus gabar*

by P. A. Clancey

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The Gabar Goshawk *Micronisus gabar* (Daudin), 1800: Graaff-Reinet, eastern Cape, is extensively distributed in the savanna woodlands from Senegal and The Gambia, east to the north of the Lower Guinea Forest to Ethiopia, Somalia and the southwestern mountains of the Arabian Peninsula, south in the east of the continent to the South African Sub-Region, where it tends to be sparse in semi-desertic karooid country and absent from the southwestern and southern Cape. In the south of the range it is most numerous in regions with the annual rainfall below 500 mm.

M. gabar is strongly dimorphic, with perhaps as many as a fourth of collected specimens being melanistic variants lacking the white rump of the norm, the upper- and under-parts and wing-coverts sooty black rather than bluish grey, and the venter lacking barring. Melanistic examples are on record from the entire range, but with a trend to be more numerous in mesic areas (*vide* Brown 1986). While the species is currently normally treated as monotypic, the fact that this predator varies geographically has been known for well over a century, the population occurring immediately to the south of the Sahara from Senegal to Ethiopia with the wings and tail substantially longer than in the case of eastern and southern African birds. In his *Monograph*, Swann (1930) recognised 2 subspecies:– *M.g. gabar* in the eastern and southern parts of Africa, and *M.g. niger* (Vieillot), 1823: Senegal, in the dry savanna country immediately south of the Sahara, east to northern Ethiopia (including Eritrea) and the southwestern highlands of the Arabian Peninsula. The finding of Swann notwithstanding, the species is currently believed to have no maintainable races (see Brown & Amadon 1968, Amadon 1979 and Brown *et al.* 1982).

A recent study of the pattern of variation in *M. gabar* indicates that it is undesirable to continue treating it as monotypic, in so doing recognising that it comprises 2 relatively large sized races occupying arid vegetational belts in both the northern and southern sectors of the range, the 2 xeric taxa separated by populations of smaller sized and generally darker representatives endemic to the moist equatorial (particularly eastern) parts of the continent. It would seem that the somewhat analogous character states of the northern and southern dry country forms are basic to current belief that the size variation is essentially individual and irregular rather than demonstrably ecologically and regionally based. Names are available for the 2 xeric races, but as none is to hand for the equatorial populations one is introduced below.

The Gabar Goshawk is often viewed as congeneric with the Chanting Goshawks in the genus *Melierax* Gray, 1840, but as it is accipitrine in its hunting strategy and is set apart morphologically (as by its different proportions and mode of wing-moult), uniting the 2 genera seems undesirable. Moreover, *Melierax* spp. (*M. metabates, M. canorus* and *M. (c.)*

poliopterus) are unlike *Micronisus* in not being dimorphic. Recently, Colebrook-Robjent (1986) has argued in favour of suppressing *Micronisus* as a synonym of *Melierax*, but Kemp (1986), writing in the same issue of the journal, seemed less certain of the acceptability of such action.

Three races of the Gabar Goshawk are admitted.

Micronisus gabar gabar (Daudin)

Falco gabar Daudin, *Traité d'Ornith.* Vol ii, 1800, p. 87: interior of South Africa, restricted to Swart R., Graaff-Reinet, eastern Cape.

Description. In the grey, ventrally barred morph with the upper-parts and wings approximately silvered Mouse Gray (Ridgway 1912); rump white. Below, with the gorget Pallid Mouse Gray; rest of venter dull white, finely barred with dark grey. In the melanistic morph entire contour plumage (including rump) and wing-coverts sooty black. Barring in wings as in grey morph. Size relatively large (see Table 1).

Material examined. 55 (South West Africa/Namibia, 5; Botswana, 6; northern Cape, 2; Transvaal, 10; Zululand, 1; Zimbabwe, 21; Mozambique (Tete), 3; southern Zambia, 7).

Range. Southwestern and southern Angola, South West Africa/ Namibia (except southwest), Botswana, Cape Province (except southwest and south), east to Zimbabwe, southern Zambia, Orange Free State, Transvaal, western Mozambique, eastern Swaziland, and Natal and Zululand.

Remarks. 3 dry season specimens in the collection of the Durban Natural History Museum, 2 adult ♂♂ from "Mkien", Bulawayo, Zimbabwe, with tails 147 mm and 147.5 mm and one from "Malamala" on the border of the Kruger National Park in the eastern Transvaal with the tail 145 mm may be migrants from rather further north, as tails in typical southern males are 156 mm and longer. They are, however, not dark as in the case of tropical birds.

Micronisus gabar aequatorius subsp. nov.

Type: ♂, adult. Cole's Farm, Lake Elmenteita, Rift Valley, Kenya. 23 March 1958. Collected by P. A. Clancey. In the collection of the Durban Natural History Museum, D.M. Reg. No. 758.

Description. Grey morph darker and less silvered over the upper-parts and adajcent wings than in *M.g. gabar* (back approximately greyish Hair Brown, *versus* silvered Mouse Gray). Below, with gorget darker (Drab Gray), and with the mid-venter barring heavier. In the tail, the light interstices to the rectrices are more brownish tinged. Size smaller, the means of wings of ♂♂ 180.5, of ♀♀ 193.5, *versus* ♂♂ 188.5, ♀♀ 205.4 mm.

Differs from *M.g. niger* in its colder and darker, less brownish, grey upper-parts and wings, and with the gorget clearer and darker grey; barring of rest of venter generally coarser. Smaller in size: means of wings of ♂♂ of *M.g. niger* 194.0, of ♀♀ 210.3 mm.

Measurements. See Table 1.

Material examined. 40 (*Kenya;* "Kenya", Tsavo, Voi, Athi/Tsavo R., Lumbo Plateau, Uasso Nyero, Charles Falls (Uasso Nyero), Mamandu,

TABLE 1

Wing- and tail-length (mm) statistics in the Gabar Goshawk *Micronisus gabar*

		WINGS				TAILS			
Territory	Sex	n	range	x̄	SD	n	range	x̄	SD
Micronisus gabar gabar									
South West Africa,	♂	6	182–195	189.9	6.05	4	157–164	159.7	3.09
Botswana, N. Cape	♀	7	199–206	203.2	2.92	5	159–177	167.6	7.92
Zimbabwe, S. Zambia,	♂	19	182–195	188.4	3.59	10	147–176	162.2	9.68
Mozambique	♀	12	202–213	206.7	3.41	9	166–187	174.4	6.69
Transvaal, Natal,	♂	5	186–192	187.4	2.60	2	145, 151	–	–
Zululand	♀	6	200–211	205.1	4.53	2	156.5, 170	–	–
Wings of 30 ♂♂ 182–195 (188.5), SD 3.98; tails of 16 145–176 (159.8), SD 9.05									
Wings of 25 ♀♀ 199–213 (205.4), SD 3.74; tails of 16 156.5–187 (170.9), SD 8.10									
Micronisus gabar aequatorius									
Kenya, Uganda,	♂	7	173–187.5	179.3	5.96	10	139–151.5	144.7	3.66
Tanzania, Malawi	♀	9	190–198	192.8	2.89	5	157–165	159.4	3.20
N. Zambia	♀	1	194			1	168		
Cameroon	♂	1	187						
Somali, C. and S.	♂	12	171.5–186	179.8	4.73	4	139–147	142.7	3.50
Ethiopia	♀	9	189–200	194.2	4.07	4	157–170	162.5	3.20
Wings of 20 ♂♂ 171.5–187.5 (180.5), SD 5.19; tails of 14 139–151.5 (144.1), SD 3.60									
Wings of 19 ♀♀ 189–200 (193.5), SD 3.40; tails of 10 157–170 (159.4), SD 3.20									
Micronisus gabar niger									
N. Nigeria	♂	1	194			1	168		
	♀	1	213			1	179		
N. Ethiopia and Eritrea	♀	4	204–222	210.2	8.26	4	190–195	191.2	2.50
Saudi Arabia,	♂	1	194			1	166		
S. Yemen	♀	5	200–214	208.2	5.40	5	179–195	188.2	5.89
Wings of 2 ♂♂ 194, 194; tails 166, 168									
Wings of 10 ♀♀ 200–222 (210.3), SD 6.67; tails 179–195 (191.3) SD 7.08									

Statistical comparisons: *M.g. aequatorius v. M.g. gabar*

♀♀ wings $t=10.62$ $p<0.001$ DF=42
tails $t=4.12$ $p<0.001$ DF=24

M.g. aequatorius v. M.g. niger

♀♀ wings $t=8.67$ $p<0.001$ DF=27
tails $t=12.32$ $p<0.001$ DF=18

Simba R., L. Elmenteita; *Uganda:* Karamoja, Mulema; *Tanzania:* Iringa; *Zambia:* Mporokoso; *Malaŵi:* Mzimba, Chiromo; *Somalia:* Daimoli, Hargeisha, Yeloker, Burao, Buramo; *Ethiopia:* Matti, Buggali (Maki R.), L. Zwai, L. Abaya, Afdam (Danakil), L. Helene, Gafartha, Abai R. (L. Tana), Dangila, Yavello; *Cameroon:* Marua.

Range. Moist Ethiopian highlands and western Somalia to the southern Sudan, Kenya and Uganda, Tanzania (absent from littoral), northern Mozambique (in west), Malaŵi, northern Zambia and southern and east Zaïre. Probably to parts of Angola, and north of the Lower Guinea Forest to Cameroon (at Marua).

Measurements of the Type: Wing (flattened) 187.5 mm, tail 151.5 mm.

Remarks: Dowsett, in Snow (1978), has already drawn attention to the darker colouration of the grey morphs in the equatorial parts of the continent.

The small population present in arid Somalia ranges paler and more finely barred below than birds from areas to the west, recalling in some aspects the character state in the austral *M.g. gabar.* The differences are, however, at best slight, and there is no size difference.

Micronisus gabar niger (Vieillot)

Sparverius niger Vieillot, *Tabl. Encycl. Méth. Orn.* Vol iii, 1823, p. 1269: Senegal.

Micronisus niloticus Sundevall, *Oefv. K. Sv. Vet.-Akad. Förhandl.* Vol vii, 1850, p. 132: Sennar, Sudan.

Melierax gabar defensorum Meinertzhagen, *Bull. Brit. Orn. Cl.* Vol lxix, 9, 1949, p. 82: Lodar, South Yemen, at 3100 ft. a.s.l.

Description. Compared with *M.g. aequatorius* lighter, more brownish, grey over the upper-parts, wings and gorget in the grey morph, this often verging on buffy brown on the lower fore-throat in the female. Ventral barring finer, recalling *M.g. gabar.* Size much larger than *M.g. aequatorius*, the tail distinctly longer. Wings of ♂♂ with mean 194, tails 167, of ♀♀ wings mean 210.3, tails 191.3 mm. Still larger than nominate *M. gabar.*

Measurements. See Table 1.

Material examined. 12 (northern Nigeria, 2; Ethiopia (including Eritrea), 4; Saudi Arabia, 3; South Yemen, 3).

Range. Arid sub-Saharan Sahel and Guinean savannas from Senegal, The Gambia, Guinea, Mali, etc., where it is sparse, east to northern Nigeria, northern Cameroon, Chad, Sudan north of Equatoria, northern Ethiopia and the southwestern Arabian Peninsula from Asir Tihama, Saudi Arabia, south to South Yemen.

Remarks. In separating the South Yemen population as *M.g. defensorum*, Meinertzhagen (1949) described it as having a darker, more slate-grey crown and back than in continental African birds. Also in being more heavily marked (barred) below, and with the gorget darker and smokier grey. The size of the new form was given as similar to *M.g. gabar.* Material used in the preparation of this description was examined in 1985 along with the northern Afrotropical specimens in the collection at Tring, when it was concluded that the Arabian Peninsula population was not separable from the birds occurring from northern Ethiopia and Eritrea, west to northern Nigeria. Unfortunately, no Senegal topotypes are in the B.M. collection, but reasoning on the basis of established variation patterns in other polytypic species inhabiting the Sahel and Guinean savanna region of Africa, Senegal and northern Nigerian birds are of the same race. Even in the event of this conclusion being found at fault, *M.g. defensorum* would, nevertheless, be antedated by *Micronisus niloticus* Sundevall, 1850, described from Sennar, Sudan.

This taxon appears to be subject to a measure of post-breeding movement, as one of the specimens in the B.M. collection – a ♀ from Jimma, in Kaffa, southwestern Ethiopia, at 7°40′N, 36°50′E – with a wing of 222 mm is from within the breeding range of *M.g. aequatorius*.

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An undescribed plumage of Loria's Bird of Paradise *Loria loriae*

by Clifford B. Frith

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Loria's Bird of Paradise *Loria loriae* is a little known, small, sexually dimorphic bird of paradise (Paradisaeidae) of the subfamily Cnemophilinae living in rain forests of the central mountain ranges of New Guinea, from the Weyland Mountains eastward to the southern Owen Stanley Range, at 1500-3000 m (Cooper & Forshaw 1977).

The species was originally described by Salvadori (1894) as *Loria loriae* but De Vis (1894) subsequently made it congeneric with *Cnemophilus macgregorii.* Workers subsequent to De Vis (Gilliard 1969 & references therein, Cooper & Forshaw 1977) replaced it in monotypic *Loria,* but Diamond (1972) had previously again placed it in *Cnemophilus* in view of similarities in female plumage between the 2 birds, citing also ecological and distributional evidence. Whilst Diamond's considerations make this congeneric grouping reasonable, I am inclined to retain *Loria* until something substantial is known of the birds' life histories.

The adult male *Loria loriae* is generally glossy velvety black with iridescent blue-green lores and forehead, a slight purple gloss on upperparts and iridescent blue-green or violet-purple sheens on the inner secondaries. The bill is black, and an obvious fleshy gape and inside mouth

have been described as cream yellow (Gilliard 1969), white (Diamond 1972, Cooper & Forshaw 1977) or pale green (Beehler 1978). Adult females have been described as generally uniform yellowish-olive (Gilliard 1969, Cooper & Forshaw 1977) or dull greenish-olive (Beehler 1978) with a strong olive-brown wash on wing flight feathers and, to a lesser extent, on upper tail feathers. Feathers of the upperparts are edged with faintly darker pigmentation, giving a scaled appearance to plumage. Juvenile and immature birds have consistently been described as like the adult female (Iredale 1950, Ripley 1964, Gilliard 1969, Cooper & Forshaw 1977, Beehler 1978). No specimen of the species has been described in anything but the 'black' adult male or the 'green' immature or female plumage.

During November 1985, 8 skins of *Loria loriae* then in the collection at Baiyer River Sanctuary (BRS) Eastern Highlands, Papua New Guinea were examined (see Table 1). One female was found to be in an apparently undescribed overall grey plumage, a detailed description of which follows.

Loria loriae BRS specimen 0547, female collected 14 November 1972 at Tuman River, 20 km E of Mt Hagen Kubor Range by G. George:–

chin pale grey, throat, breast and lower breast medium grey with feather tips lightly edged with darker grey giving faint scaled appearance (as in normal female 'green' plumage). Lower underparts, or abdomen, very pale grey or dirty off-white becoming mid-grey on the flanks. Thigh feathering mid grey-brown. Underwing like a normal female bird's on primaries and secondaries, but the olive-yellow of a normal female's coverts is pale russet or grey-brown. Under tail colour similar to a normal female bird's but slightly paler. This bird's upperparts lack almost any green colour save for the slightest hint of olive in mantle and upper tail coverts. The upperparts are dusky grey-brown with the feathering of lores, crown, neck, and mantle margined with dark grey to produce a scaled appearance, lores being slightly paler. The crown, neck and back are conspicuously darker and browner than the throat and breast. Upper tail, with no trace of green-yellow, is deep russet-brown with faint hint of olive. Upper tail coverts and lower rump have a smoky-grey suffusion giving them a slightly lighter appearance than other upperparts. The primaries are similar to a normal female's, but show no green colour. Secondaries and tertials are dark russet-brown with only the slightest suggestion of olive-green, unlike normal female specimens. Wing coverts and alula are the same colour as the mantle but a little darker.

Having discovered the above grey bird I examined the 3 *Loria* skins in the Papua New Guinea National Museum (PNGNM), Port Moresby, on 10 December 1985 (see Table 1). Two of these exhibit interesting plumage intermediate between normal 'green' female and the 'grey' plumage of BRS specimen 0547. Descriptions of these follow.

Loria loriae PNGNM specimen 20743, female ?, Tuman River, Kubor Range:–

underparts predominantly pale grey but with normal female pale olive feathers coming through grey on lower throat and upper breast; pale yellow-olive feathers extensively coming through central lower breast and abdomen; flanks similar but slightly greyer. Sides of head, ear coverts and

lores pale grey slightly suffused with pale yellow-olive. Crown smoky grey with darker grey feather-edging giving slight scaled appearance, these feathers larger and softer than in the immature male. Mantle and back dull olive-green suffused with grey brown. Wings similar to those of subadult male 11783, but coverts more rufous, like primaries, as opposed to the olive-yellow of a subadult male. Upper tail rufous brown, like primaries, being less olive-yellow than the subadult male's.

Loria loriae PNGNM specimen 20773, sex unknown, Tuman, Kubor Range:–

similar to specimen 20743 but more of the grey replaced by yellow-olive feathers below, only a little grey remaining. Upperparts colouration is about mid way between the plumage of specimen 20743 and that of the subadult male 11783 except that most crown feathers of this specimen (20773) are missing and that the feathers of the neck, mantle and back have an iridescent blue-green sheen to them. The latter may be indicative of a male bird.

For measurements of the above specimens see Table 1.

TABLE 1

Specimens of *Loria loriae* skins in Baiyer River Sanctuary (BRS) and Papua New Guinea National Museum (PNGNM) collections.

Skin	Sex	Location	Wing	Tail	Thl	Culmen	Tarsus
		L.l. amethystina					
BRS							
0829	ad ♂	Tuman, Kubors	108	77	53.4	26.2	38.9
5282	ad ♂	†Leppa Ridge	103	76	51.6	27.5	37.2
5312	ad ♂	Leppa Ridge	106	77	53.4	27.1	36.7
2453	subad ♂	Trauma/Jimi Devide	111	75	53.8	27.4	–
5305	?	Tari Gap	103	82	54.5	27.3	37.2
0826	?	Kubor Range	106	83	52.8	26.2	37.
0833	♀	Tuman River, Kubors	107	80	53.8	27.5	38.7
0547**	♀	Tuman River, Kubors	104	78	52.0	25.8	36.1
PNGNM							
20743*	? ♀	Tuman River, Kubors	102	78	54.0	26.8	37.5
20773*	?	Tuman River, Kubors	107	82	50.7	25.1	37.5
		L.l. loria					
11783	subad ♂	Wau, Morobe District	105	77	50.5	25.4	38.3

Thl = total head length = maximum skull plus bill length
** = all grey plumage: collected by the Baiyer River Sanctuary
* = part grey plumage: collected by the Baiyer River Sanctuary
† = Baiyer River area

Discussion

Given the limited knowledge of *Loria loriae* and its populations it is difficult to assess the significance of the grey plumage described above. A comparison of measurements of the 3 grey specimens with normal birds from the same area provides no obvious indication of age differences based on size (Table 1).

All 3 'grey' birds are from the same area. As Ripley (1964) describes 2 juvenile *Loria loriae inexpectata* specimens as similar in colour to an adult

female, the distinct grey plumage must at present be considered either (1) an aberrant plumage found in at least some birds of the Kubor Range, or (2) dimorphism within the female plumaged immature birds, of the Kubor Range at least, or (3) an immature plumage found in some or all of the populations of *L.l. amethystina* and perhaps also in *L.l. loriae*, but certainly not in all *L.l. inexpectata*.

It is noteworthy that *Loboparadisea sericea*, the third member of the Cnemophilinae, is presently considered unique among birds of paradise in having an immature plumage distinctly different from the adult female (Gilliard 1969, Cooper & Forshaw 1977), whereas immature *Cnemophilus macgregorii* are similar to the adult female (Cooper & Forshaw 1977).

Of the 3 Cnemophiline species, nesting data are documented for only *Cnemophilus macgregorii* (Loke 1957, Gilliard 1969, Cooper & Forshaw 1977). In *Cnemophilus* the nest is, uniquely in birds of paradise, domed and apparently only the female feeds nestlings; and it was thought probable that the other 2 subfamily members might also prove to build domed nests (Frith 1985). It is, thus, worthy of note that Majnep & Bulmer (1977) intimate that *Loria loriae* builds a domed nest and that both male and female plumaged birds enter the nest. Nesting data for *Loria* and *Loboparadisea* are much needed in order to further understand these peculiar birds of paradise, including the status of grey plumaged *Loria*.

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The provenance of the Gilbert Rail *Tricholimnas conditicius* (Peters & Griscom)

by Michael Walters

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Many of the distinctive rail species found in the Pacific and Indian Ocean regions appear to have been derived from an adaptive radiation of a group of rails with long but stout bills. In isolation on islands these rails produced divergent forms. Two moderate-sized island rails which appear to be derived from this group were placed in the genus *Tricholimnas;* Lafresnaye's Rail *T. lafresnayanus* from New Caledonia, and the Woodhen *T. sylvestris* from Lord Howe Island. Later Peters & Griscom (1928) also assigned to this genus the Gilbert Rail *T. conditicius,* known only from a single specimen believed to have come from Apiang Atoll in the Gilbert Islands.

Greenway (1952) queried the locality of origin of the last-named species and suggested that the specimen was in fact an immature female of the Lord Howe Island Woodhen. In the present paper some of the information concerning *T. conditicius* is re-examined with a view to determining its status.

Morphology and taxonomy

The holotype of *conditicius,* whose sex was not determined, was described as much smaller than *T. sylvestris,* but its measurements are only slightly smaller than those of female *sylvestris.* In the original description, Peters & Griscom stated that the skeleton showed evidence of immaturity; the adult would therefore be larger, probably comparable in size to a female *sylvestris,* and possibly more similar than was supposed. Since the colouration is similar to that of *T. sylvestris,* Greenway (1952) suggested that any difference might be due to its having been preserved in alcohol for about 60 years; but while alcohol dissolves out red and yellow pigments (and in so doing may modify others) it does not usually affect the brown and grey melanins involved in this instance. (I am indebted for this information to C. J. O. Harrison, based on specimens in alcohol in the BMNH.)

The locality of ***T. conditicius***

T. conditicius was described from a single specimen preserved in alcohol, and no other specimens are known. It was labelled "Kingsmill Islands 1861, Andrew Garrett, collector". Greenway (1952), in suggesting that the locality was an error and that the specimen was an immature individual of *T. sylvestris,* believed that Garrett either had visited Lord Howe Island, or had had the specimen sent to him from there. However, Garrett's biography (Thomas 1979) indicates that it is unlikely that he ever visited Lord Howe and had certainly not been there prior to 1861. Although he subsequently dealt widely in natural history specimens, these were almost entirely marine organisms, so that any birds would most likely be incidental specimens picked up on his travels (S. L. Olson).

He began collecting in 1852 when he arrived in Hawaii and began to deal mainly in shells and fish. In 1856 he visited the Marquesas and Society

Islands, but most of his collections were later lost. In 1859-60 came his visit to the Kingsmill Islands. Holyoak & Thibault (1978) in considering other bird taxa based on Garrett specimens, state that Graffe in 1873 . . . "considers Garrett's locality labels to be reliable, and we have come to the same conclusion after seeing many specimens collected by him". If, therefore, the locality was correctly given as Kingsmill Islands, the specimen is not likely to have been *T. sylvestris.*

It would seem impossible for a virtually flightless rail to have crossed well over 2000 miles of the Pacific Ocean, from Lord Howe Island to the Gilberts. The only other possibility would be an error in mislabelling by the Museum of Comparative Zoology.

Assuming the label to be correct, it indicates that the specimen was collected in the Gilbert Islands. Kingsmill Islands now refers to only a part of that archipelago, but in the last century was used for the whole group. Peters & Griscom (1928) discovered (Warren [1860]) that Garrett had arrived at Apiang Atoll on 9 September 1859, staying on that island for a time and returning to Honolulu on 11 January 1860. They assumed that the rail was collected between these dates and that the year 1861 on the label referred to the date of its arrival at the Museum. On the basis of this information they listed locality and date as "Apiang, Gilbert Islands, 1859". The island has more recently been spelled Abaiang (Amerson 1969).

There is, in fact, no evidence that the rail was collected on Apiang as opposed to some other island in the group, and there is evidence suggesting the latter to be more likely. The small book [1860] by Mrs Jane S. Warren (misquoted as Mrs James S. Warren by Peters & Griscom and by Greenway) gives a contemporary account of Apiang which was the centre of the Micronesian Mission. Stores for the mission (including meat) took 2 years to reach Apiang and when they arrived they were often spoiled. The possibility of a rail which would be edible if not palatable, surviving on such a meat-starved island even as late as Garrett's visit seems highly unlikely.

In addition, Greenway discovered an undated MS note written by Garrett on the "Birds of Apiang" which reads:– "During my short residence at the above location, I collected one or two specimens of every bird I could get. As I had not time to prepare their skins I packed them in alcohol. There is one species of land bird, and this I never saw but obtained one of its tail feathers which I send you. I think it is a species of Hawk." This feather cannot now be found, and Greenway considered it unlikely that Garrett would consider the rail to be a seabird or a hawk.

Garrett went out on the third voyage of the Morning Star, which dropped him at Apiang while it visited other mission stations such as Ponape. It then returned to Apiang, collected Garrett and called only at Ebon Atoll on its return journey to Honolulu (Warren [1860]). Ebon is in the southern Marshalls, close to the northern Gilberts and might have been construed as being part of that group. It is one of the lushest, best vegetated and most fertile of the Marshall Islands (Amerson 1969) and could have provided a suitable habitat for the rail. The case for Ebon as the type locality is strengthened by the fact that Peters & Griscom (1928) also

describe a dove *Ptilinopus marshallianus* from that island, known only from the holotype.

One piece of the data remains which has apparently been overlooked. In the original paper by Peters & Griscom, G. M. Allen added in his appendix on the dissection of the specimen: "The large, thick-walled stomach contained seeds of two species, the chitinous shell of a small beetle, and an entire harvest fly." It is surprising that no-one seems to have realised the significance of this comment. If the insects could be identified it is possible that the island of origin could be established. However, the present curator of the Museum of Comparative Zoology, R. A. Paynter, Jr, advises me that these specimens cannot at present be found.

On the present evidence it would appear that the type locality for *Tricholimnas conditicius* is Kingsmill Islands, interpreted as covering the Gilbert Islands in the broad sense, but with the likelihood that Ebon in the Marshalls was also included in this term.

Habitat

In discussing *T. conditicius,* Greenway (1952) laid emphasis on the fact that *T. lafresnayanus* and *T. sylvestris* were members of what he considered an habitually mountain-inhabiting genus preferring forested hills and that it would be improbable for a species of the genus to occur on a low atoll. He appears to have overlooked a fact which he later quoted (1958), that *T. lafresnayanus* formerly inhabited forested river valleys near the coast (Layard & Layard 1882) and had been limited subsequently to mountain forest by predation from introduced dogs, cats and rats. *T. sylvestris* of Lord Howe Island occurs as a tiny relict population in damp forest on a mountain summit. However, during recent conservation studies of the species, Fullagar (1985) comments that when a pair was given the opportunity to breed on low ground they did so rapidly and with far greater success than the mountain birds. Thus *T. sylvestris* appears to be another species that prefers vegetated lowland, but has been forced into an unsatisfactory marginal habitat by predation in the past. In the circumstances the existence of another species related to one of these, on a low island, would not be exceptional, especially if the low island were a well vegetated one such as Ebon.

It is possible that another member of this group formerly occurred in New Zealand. In 1893, Hamilton described bones from Castle Rocks which he called *Ocydromus minor.* Bones of this form have subsequently been discovered at several sites in New Zealand (Scarlett 1955, Oliver 1955). All are from Pleistocene deposits and were described as most similar to *T. sylvestris* but generally larger, though the tibia is smaller.

Conclusions

The available evidence suggests that Peters & Griscom correctly described the type of *Tricholimnas conditicius* as a species. It seems probable that this species and *T. sylvestris, T. lafresnayanus,* and possibly *T. minor,* all represent relict populations of a group of rails formerly occurring widely on low islands in the western Pacific Ocean.

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New records of birds from western Peru

by Thomas S. Schulenberg

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Although much of western Peru is relatively accessible, at least by comparison with the forested eastern part of the country, many aspects of bird distribution on the western slope of the Andes remain surprisingly little known. This paper gives details of several recent records from this region.

WOOD STORK *Mycteria americana*

I saw an immature in the marshes at Villa, on the outskirts of Lima, Dpto. Lima, 22 Jan. 1985. Another was present at Mejia, Dpto. Arequipa, 17 Jan-28 Feb 1985 (R. A. Hughes). A third, based on a description by a boatman who had demonstrated familiarity with all the expected local birds (*fide* T. A. Parker), was present on Paracas Bay, Dpto. Ica, mid-Jan 1986. These appear to be the first records of Wood Stork on the coast of Peru south of Dptos. Tumbes and Piura, in the extreme northwest of the country (Hellmayr & Conover 1948, Blake 1977), although the species has been recorded in the western Andes of central Peru (Koepcke 1970).

SPECKLED TEAL *Anas flavirostris*

T. A. Parker and I found a single teal in marshes at the mouth of the Rio Pisco, Dpto. Ica, 12 Jul 1986. It was readily identifiable by its relatively small size, prominent yellow bill, and the dark brown head contrasting with the paler body plumage. This is only the second record of this Andean species on the coast of northern or central Peru (Pearson & Plenge 1974),

although it occasionally wanders to the coastal marshes at Mejia, Dpto. Arequipa (R. A. Hughes).

WILSON'S PLOVER *Charadrius wilsonia*

I found a female-plumaged Wilson's Plover on a sandy beach bordering an inlet at the mouth of the Rio Pisco, Dpto. Ica, 20 Aug 1986. It could be directly compared with a Snowy Plover *C. alexandrinus*, and was distinguishable by its larger size, heavier bill, and flesh-coloured legs. Wilson's Plover breeds locally in northern Peru, but has been recorded on only a few occasions in central and southern Peru (Plenge *et al.* in press).

GULL-BILLED TERN *Sterna nilotica*

At least 12 in breeding plumage were at the mouth of the Rio Reque, south of Chiclayo, Dpto. Lambayeque, 12 Feb 1986. None appeared to be paired, and there was no other indication of breeding activity. All previous Peruvian records are from the coasts of Dptos. Lima, Ica, and Arequipa (Koepcke 1970, Plenge 1974, Hughes 1976, Plenge *et al.* in press), although this species would certainly be expected also to occur along the less-studied northern coast. More surprising was the number of individuals present, one of the largest groups reported from Peru. A similar number at Playa Ventanilla, Dpto. Lima, in 1972 was attributed to an *El Niño* phenomenon (Plenge 1974), but there was no evidence of *El Niño* conditions in Feb 1986, though a massive southern influx of coastal waterbirds nonetheless may have been involved. Also present at this location on the same date was the exceptional number of at least 6000 Laughing Gulls *Larus atricilla*.

YELLOW-BILLED TERN *Sterna superciliaris*

T. A. Parker and I saw a single tern on Paracas Bay, Dpto. Ica, 21 Jan 1986, both in flight and at rest in direct comparison with a flock of 30 Peruvian Terns *S. lorata*, with which it was loosely associated; it was separable from the Peruvian Terns by its paler grey upperparts, pure white underparts, and yellow-orange, not black and yellow-green, bill, and from the Least Tern *S. antillarum*, an occasional visitor to Peru (Schulenberg *et al.* in press), by the extensive amount of black in the outermost primaries and by the unmarked yellow bill. There appear to be no prior records of Yellow-billed Tern for the Pacific coast of South America (Blake 1977).

THICK-BILLED MINER *Geositta crassirostris*

G. R. Graves collected a male (Louisiana State University Museum of Zoology=LSUMZ 82738), 27 Oct 1976, at a site 12 km by road E Arequipa, Dpto. Arequipa, 2675 m, on the highway from Arequipa to Juliaca, and it has been found on several subsequent occasions in this area between the city of Arequipa and the village of Chiguata, from 2675 to 3000 m, in low densities on rocky slopes with sparse vegetation or near the rims of large washes. I collected 2 additional specimens, June and July 1983 (LSUMZ 114105-114106).

These are the first records of *Geositta crassirostris* from Dpto. Arequipa; it was previously known from several locations in Dpto. Lima (Hellmayr 1925, Koepcke 1965) and from "Pauza, Loichos", about the location of which there appears to be some confusion. The record from there is based on 2 males collected by J. Kalinowski (Berlepsch & Stolzmann 1901, 1906), which formed the basis for *Geositta fortis* (Berlepsch & Stolzmann 1901: 194) and which Hellmayr (1925: 14) later synonomized with *G. crassirostris*. Koepcke (1965), however, believed *fortis* to be a recognizable subspecies of *G. crassirostris*. As it is the type locality of *fortis*, the location of "Pauza, Loichos" is thus of some importance.

Kalinowski collected 10 species, Feb-Apr 1894, at "Pauza" including some of unquestioned Pacific-slope origin such as *Rhodopis vesper* and *Atlapetes nationi*. Berlepsch & Stolzmann (1906) located "Pauza" in Dpto. Ayacucho, while recent authors have identified "Pauza" as "Pausa", a town in the Pacific drainage of southern Dpto. Ayacucho that appears on recent maps of Peru (Vaurie 1972, Stephens & Traylor 1983). Two variants of "Pauza" also appear in Berlepsch & Stolzmann (1906). Kalinowski collected a *Columba maculosa* at "Pauza, Puiura" on 2 Mar 1894, an unknown locality presumed to be near "Pauza" (Vaurie 1972, Stephens & Traylor 1983). The other variant is "Pauza, Loichos," where Kalinowski reportedly collected the 2 *Geositta crassirostris* on 15 Nov 1894 and an *Anairetes flavirostris* on 14 Nov 1894. Berlepsch & Stolzmann (1906: 66) located "Pauza, Loichos" in Dpto. Ayacucho. Other Kalinowski specimens taken in November 1894 are from localities in Dpto. Cuzco (loc. cit.: 73). Berlepsch & Stolzmann apparently did not notice this discrepancy, but from the conflict in the dates, Stephens & Traylor (1983: 160–161) suggested that "Pauza, Loichos" may also be in Dpto. Cuzco. Actually, Berlepsch & Stolzmann (1906) provide a number of apparent internal contradictions. For example, *Myrtis fanny* is recorded at Pauza in June 1894 (page 72), although Kalinowski was said to have left for Cuzco in April 1894 and

to have been at Santa Ana, Dpto. Cuzco, in June of that year (pp. 63, 73). Similarly, (page 73) they gave the date that Kalinowski collected at "Puncuios, Puna de Idma" as 24 Nov 1894, yet the only species mentioned from that locality, *Cistothorus platensis*, was said to have been collected on 14 Nov 1894 (notably also the date on which Kalinowski supposedly collected the *Anairetes flavirostris* at "Pauza, Loichos"). It is quite impossible to know, without examining the collection in question, how many of these discrepancies are attributable to Kalinowski and how many to Berlepsch & Stolzmann. In any given case, either the date or the locality could be wrong. As it is so very unlikely, however, that *Myrtis fanny* or *Geositta crassirostris* would be found anywhere in Dpto. Cuzco, my inclination would be to trust the reported locality information over the reported date in the cases that I have described. I conclude that "Pauza, Loichos" is indeed on the Pacific drainage in Dpto. Ayacucho, presumably near Pausa.

Geositta crassirostris has also been found in southern Dpto. Ayacucho along the highway from Nazca, Dpto. Ica, to Puquio, Dpto. Ayacucho, from 1875 to 3650 m, in habitat similar to the Arequipa locality. The LSUMZ contains a series of 9 skins and 2 skeletons collected along this highway intermittently between 1974 and 1983, and the species undoubtedly is much more widespread than the few known localities would indicate.

SCALED ANTPITTA *Grallaria guatimalensis*

I collected a male (LSUMZ 106082) at Km 34 on the highway from Olmos to Bagua Chica, Dpto. Piura, 1275 m, 29 Jan 1982; this locality is on the western slope of Abra de Porculla (Porculla Pass). Two or three individuals were heard at this same locality 11 Jan and 13 Feb 1985, and 13 Feb 1986; one of the singing birds was also seen on each of the February visits. Another *G. guatimalensis* was heard 11 Jan 1985 near the crest of the pass at 1975 m. At both locations (1275 and 1975 m) *G. guatimalensis* was found in narrow remnant strips of humid streamside forest. The only previous locality for this species on the west slope of Peru was near Llama, Dpto. Cajamarca (Koepcke 1961), c. 85 km SSE of Abra de Porculla.

TAWNY-RUMPED TYRANNULET *Phyllomyias* [*Tyranniscus*] *uropygialis*

I saw one 5 Feb 1985 in a brushy-filled wash below Chiguata, c. 2750 m, Dpto. Arequipa which persistently gave a simple, buzzy song, "swee-swee". At close range, identification was based on the small size, dusky crown contrasting with the brown back, and buffy wing-bars and rump. *Phyllomyias uropygialis* is poorly known in Peru; most of the rather few localities are from the east slope of the Andes (Zimmer 1941, Morrison 1948, specimens LSUMZ). The only other strictly west slope records are specimens from El Tambo, Dpto. Piura (Bond 1947), and Surco, Dpto. Lima (Cory & Hellmayr 1927); Koepcke (1970), however, did not include *P. uropygialis* in her book on birds of Lima. The record from El Tambo presumably represents a resident population, as the species has been recorded from several locations in adjacent southwestern Ecuador (Chapman 1926). The isolated records from Dptos. Lima and Arequipa, however, may represent wandering individuals, although the species is not known to be migratory.

WHITE-FRONTED GROUND-TYRANT *Muscisaxicola albifrons*

Two of these large ground-tyrants were found at the upper end of Laguna Orconcocha, 3725 m, Dpto. Ancash, 10 Feb 1985, in a bog, the species' preferred habitat (pers. obs.). Previously known north only to Dptos. Lima and Junin; there appear to be no prior records for Dpto. Ancash (Traylor 1979).

BANK SWALLOW *Riparia riparia*

Some 60-80 were feeding over a coastal marsh at the mouth of the Rio Reque, Dpto. Lambayeque, 12 Feb 1986. Although previously reported along almost the entire length of the Peruvian coast, from Dpto. Tumbes to Dpto. Arequipa (Hughes 1976, Plenge 1974, Schulenberg & Parker 1981), all previous coastal records are of only 1-5 birds seen at any one time, and all of them Sep-Dec. The lack of earlier records during the northward passage may reflect the relative scarcity of observers, not Bank Swallows, on the Peruvian coast at that time of year.

SLATY THRUSH *Turdus nigriceps*

H. Watkins collected a male (American Museum of Natural History=AMNH 236057) at Seques, Dpto. Lambayeque, 4 Aug 1926. R. Thomas collected a female (LSUMZ 78987; skull incompletely ossified), 7 Dec 1974, c. 15 road km east of Canchaque on the road to Huancabamba, Dpto. Piura, where Parker *et al.* (1985) considered *Turdus nigriceps* to be "rare". I found 3-4 apparently territorial pairs at Km 34 on the highway from Olmos to Bagua Chica,

Dpto. Piura, 1275 m, 29 Jan 1982 (adult male collected, LSUMZ 106515, testes 11 x 6 mm), 11 Jan 1985, 13 Feb 1985 (including a male feeding a recently-fledged juvenile) and 13 Feb 1986. Males were singing frequently throughout the morning during both my January visits; the volume of song was reduced during February visits. The only previously known locality for *T. nigriceps* anywhere on the western slopes of the Andes was Taulis, Dpto. Cajamarca, where Koepcke collected 2 males, Dec 1952 (Koepcke 1961). It is almost certain that *Turdus nigriceps* breeds locally on the west slope of the Andes in northwestern Peru, although it may not be a permanent resident at the breeding sites. For example, it was not found at Km 34 by other LSUMZ field researchers on 21 Sep 1977 nor 2-4 June 1980.

Known from numerous locations on the eastern slope of the Andes in Peru, the Slaty Thrush is generally regarded as non-migratory, though there is much evidence that it is largely, if not entirely, a non-breeding visitor to eastern Peru. All but 2 specimens from eastern Peru in American museums with large Peruvian collections were collected 28 May-9 Sep (88 specimens from LSUMZ, AMNH, Field Museum of Natural History (FMNH), Academy of Natural Sciences of Philadelphia, Museum of Vertebrate Zoology, and Peabody Museum of Natural History, Yale University). The few published dates for specimens in other collections also fall within this period (Taczanowski 1882, Berlepsch & Stolzmann 1896). Such a narrow range of dates is what would be predicted if the species occurred in Peru only as a non-breeder, and not as a resident. The 2 exceptions quoted are both males (AMNH 235037-8) from Uscho, Dpto. Amazonas (?), collected on 3 Nov and 25 Oct 1925, respectively, the testes of one being noted as "slightly" enlarged, of the other as "not" enlarged; apparently not breeding, these 2 males may have been late migrants. Evidence of seasonal occurrence in southeastern Peru was recently obtained by J. W. Fitzpatrick, who regularly encountered this species on his study sites July and Aug, but never in Oct or Nov; in addition *T. nigriceps* is not known to sing in eastern Peru at any season (T. A. Parker, J. W. Fitzpatrick).

Although most east Peruvian localities are from the lower slopes of the Andes (1000-1700 m), there are records from as low as 380 m (Terborgh *et al.* 1984), in tropical rain forest east of the Andes. This unusually wide altitudinal range is more likely to reflect dispersal of non-breeding visitors than the distribution of a breeding resident. In contrast to the situation in Peru (and probably also Dpto. La Paz, Bolivia – specimens, LSUMZ), *T. nigriceps* has been found breeding in Dpto. Tarija, Bolivia, Dec, Jan and Feb and has been collected in Dpto. Cochabamba, Bolivia, Jan and Feb (specimens FMNH).

T. nigriceps occurs in eastern Peru in the austral winter, suggesting that it originates from the breeding population of southern Bolivia and northwestern Argentina. Olrog (1979) makes no mention of seasonal movements, but Dinelli (1918: 58) gave an explicit statement of migration in northwestern Argentina: "Este zorzal llega en Octubre a las provincias del norte y emigra en los meses de invierno" ("This thrush arrives in October to the northern provinces and migrates away in the winter months"). Nores *et al.* (1983) recorded the species in Prov. Córdoba, Argentina, Oct-Apr (extreme dates 30 Sep to 20 Apr – M. Nores). The correlation between the virtual absence of *T. nigriceps* in eastern Peru after early September and its absence on known breeding grounds in Argentina before October, combined with the complete lack of breeding records from eastern Peru strongly suggest that *T. nigriceps* is indeed a migrant from the Andes of northwestern Argentina (and southern Bolivia?) to the eastern Andes north of central Bolivia.

The status and distribution of *T. nigriceps* in Ecuador remains unclear. The only specimens from Ecuador are 2 in the British Museum (Natural History), collected by Buckley and labelled "Monji". On the basis of this record, Hellmayr (1934: 410) reported *T. nigriceps* from the "subtropical zone of southeastern Ecuador", the distribution followed by later authors (Ripley 1964, Meyer de Schauensee 1966). The location of Monji is, in fact, not known, although it is believed to lie in western, not eastern, Ecuador (Chapman 1926: 713, Paynter & Traylor 1977). Despite this uncertainty, there seems little reason to doubt that *T. nigriceps* occurs in Ecuador, as it has been collected in northern Peru within 60 km of the Ecuadorian border on both the western and eastern slopes of the Andes.

COLLARED WARBLING-FINCH *Poospiza hispaniolensis*

S. E. Allen and I recorded this species daily in small numbers at Cerro Coscantire, 5 km E Chala, 425 m, Dpto. Arequipa, 16-19 June 1983. They were singing, and the 2 collected (LSUMZ 114219, male; 114220, female) were both in breeding condition. One also was seen in "mid-1983" at Quebrada Lluta, 8 km NW Mollendo, Dpto. Arequipa (*fide* R. A. Hughes)

and R. A. Hughes saw a male near Camaná, Dpto. Arequipa, Apr 1984: These appear to be the first reports of this species from Dpto. Arequipa; previously it was known south only to Nazca, Dpto. Ica (Bond 1951), but it may in fact not occur regularly in Dpto. Arequipa. The 1983 records were obtained during a period of exceptionally lush herbaceous growth in coastal Peru following the heavy rains associated with the 1982-1983 *El Niño* episode, and *P. hispaniolensis* may have opportunistically occupied areas such as Cerro Coscantire that are usually too arid to be hospitable.

YELLOW-TAILED ORIOLE *Icterus mesomelas*

Two (a pair?) of these orioles were seen on 14 Feb 1985 at Laguna, Dpto. Lambayeque. These birds, one of which was singing, were foraging with a single White-edged Oriole *I. graceannae*. The two *I. mesomelas* were easily distinguished by their noticeably larger size, paler, more yellow, colour, yellow, not white, edges to wing coverts, and conspicuous yellow outer rectrices. Schulenberg & Parker (1981) reported the first records of *I. mesomelas* for Dpto. Lambayeque. Laguna is c. 125 km south of the southernmost previous records for the west slope of Peru.

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Address: Thomas S. Schulenberg, Museum of Zoology, 119 Foster Hall, Louisiana State University, Baton Rouge, Louisiana USA 70803.

IN BRIEF (1)

Colonel Meinertzhagen's wing drawings

"Many years ago, during the last years of the First World War, I conceived the idea of writing up the many aspects of Bird Migration, embodying all recorded facts and certain observations of my own" (R. Meinertzhagen, unpublished Ms). As an essential component of the information which he

needed for this huge enterprise, only a small part of which was ever completed (*Ibis* 97 (1955): 81-117, on the speed and altitude of bird flight), Colonel Meinertzhagen systematically recorded data on the weight, wing-length, wing-shape and wing-area of birds, meticulously making tracings of the spread wings of birds which he collected. When I visited him at his house in Kensington Park Gardens in the early 1950s, he showed me the files and drawings containing this mass of information. Its potential value to ornithology was very evident.

Late in 1963 Col. Meinertzhagen, perhaps knowing that he himself would never be able to make full use of this great collection of data, generously sent the whole of it to Dr Glen W. Shaefer, who was at that time studying bird migration by radar, with the aim of identifying species by their radar echoes, and needed information on wing dimensions. Dr Shaefer kept the material after Col. Meinertzhagen's death in 1967, apparently continuing to work on it (it seems that nothing has yet been published), until he himself tragically died, comparatively young, on 25 July 1986. He was then Director of the Ecological Physics Research Group at the Cranfield Institute of Technology. With the agreement of Dr Theresa Clay, Col. Meinertzhagen's executor, the whole collection of wing drawings and accompanying data has come to the Sub-department of Ornithology, British Museum (Natural History), at Tring, where it is available for study by *bona fide* students, on application to the Librarian.

Some idea of the scope of the data will be apparent from the following details. The species of birds covered are mainly Palaearctic and Afrotropical; altogether some 440 species are represented, the great majority being Palaearctic. For each species there is a very carefully executed drawing of the spread wing (in standard form and extension, so that they are comparable one with another), and a quantity of tabulated data.The tabulated data include, for each individual bird, sex, locality, month, weight (g), wing-length (mm), wing expanse (mm), and area of both spread wings (mm^2), with some ancillary data, e.g. if the bird was breeding, immature, emaciated, etc. In the great majority of cases, the specimens on which the data are based are in the skin collection at Tring. Some species are represented by only one set of data, for one individual; for others there is a considerable sample. Thus there is information for 25 individual Dabchicks *Tachybaptus ruficollis* from Britain (nominate subspecies), and 20 from India and Burma (*capensis*); 17 Capercaillie *Tetrao urogallus* from northern Europe, and 17 Tibetan Snowcock *Tetraogallus himalayensis* from Kashmir. For some species several subspecies are represented: for example for the Chukar Partridge *Alectoris graeca,* there are data for 20 *chukar* (northern India), 11 *pallescens* (Ladakh), 7 *cypriotes* (Crete and Israel), 7 *sinaica* (Jericho, Sinai), 15 *philbyi* (Arabia) and 7 *koroviakovi* (Quetta). Comparative data for different populations of Palaearctic migrant species, with different migratory patterns, should be of especial interest; thus for the Common Wheatear *Oenanthe oenanthe* there are samples of 40 *O.o. oenanthe,* 10 *O.o. virago* (Crete), 31 *O.o. leucorrhoa* (3 Greenland, others on migration), 4 *O.o. rostrata* (East Africa) and 12 *O.o. phillipsi* (Somaliland).

It is to be hoped that in the coming years students of bird flight and migration will consult this unique collection of drawings and tables, and so put it to the use that Col. Meinertzhagen intended, over 70 years ago.

British Museum (Natural History) D. W. Snow
Tring 25 June 1987
Herts HP23 6AP, UK

IN BRIEF (2)

The authorship of the raptor name *Circaetus fasciolatus*

The Fasciated Snake Eagle (Southern Banded Snake Eagle) *Circaetus fasciolatus* was initially proposed by G. R. Gray, *Cat. Accipitr. Brit. Mus.*, 1848: 18, where the name is a *nomen nudum*. Peters, *Check-list of Birds of the World*, 1, 1931: 270, credited validation of the binomen to Gurney (*Ibis*, 1861: 130), which view is likewise adopted by Stresemann & Amadon, in the second edition of *Peters*, 1, 1979: 310. Most recent authors, however, including Clancey (Ed), *S.A.O.S. Checklist of Southern African Birds*, 1980: 38 and Wolters, *Die Vogelarten der Erde*, 1976: 86, *inter alia*, ascribe the valid introduction of Gray's binomen to J. J. Kaup in his 'Monograph of the Falconidae' in Jardine, *Contributions to Ornithology*, 3, 1850: 72, in the combination *Circaetus fasciolatus*, listed in the subgenus *Spilornis* G. R. Gray, 1840. The type-specimen of *fasciolatus* is a relaxed mounted specimen from Port Natal=Durban, Natal, in the British Museum (Nat. Hist.), Tring, purchased from the dealer Argent (*vide* Warren, *Type-specimens, Birds, British Museum (Nat. Hist.)*, 1 (Non-passerines), 1966: 96). Judging from the date of the specimen's accession – 1845 – the accepted type-specimen of *C. fasciolatus* Kaup, 1850, is the same skin as was available to Gray in 1848.

Kaup's validation of *fasciolatus* in terms of the requirements of the *International Code of Zoological Nomenclature* has priority over that of Gurney (1861), and cannot be set aside because the introduction of the name is accompanied by a short description, which reads: "Neck-feathers pointed; lower breast, belly, and tibial feathers white, with ash-gray rufous broad bars," while the type-locality (Port Natal) is cited. This latter action is based on the Argent and only skin in the British Museum at the time (1850). Gurney (*loc. cit.*) also provides a brief description and lists a second specimen from Natal (taken in October 1858). His descriptive statement states that *C. fasciolatus* is "readily distinguished from *Circaëtus zonurus* (=*Circaetus cinerascens* von Müller, 1851) by the greater length of its tail, and by the five dark bands with which the tail is transversely marked, as well as by the anterior part of the inside of the wing adjacent to the carpal joint being transversely marked with brownish-grey bars, instead of being white".

The authority of *Peters' Check-list*, 1 (second edition), 1979, notwithstanding, attribution of the name of the present snake eagle must stand as hereunder given:

Circaetus fasciolatus Kaup

C. (ircaetus) fasciolatus Kp=Kaup, in Jardine, *Contributions to Ornithology*, 3, 1850, p. 72; Port Natal=Durban, Natal, South Africa.

It is worthwhile noting that Warren (1966) incorrectly gives the name of the present species as introduced by Kaup as *Spilornis fasciolatus*.

For assistance with the literature I am indebted to Mrs Anne Vale of the British Museum (Nat. Hist.), Tring, and the Librarian of the Transvaal Museum, Pretoria.

Fernleigh Gardens
8 Lambert Road
Morningside, Durban 4001
South Africa

P. A. Clancey
23 July 1987

IN BRIEF (3)

The Raptor Research Foundation announces a $500 annual grant in memory of Leslie Brown, "one of the most inspired and productive raptor biologists of recent decades". The grant is to provide financial assistance to promote the research and dissemination of information on birds of prey. Applications must be received by 1 October. Proposals, donations and enquiries about tax exempt contributions to the fund, as well as applications themselves, should be sent to: Dr Jeff Lincer, Chairman, RRF Leslie Brown Memorial Fund, 4718 Dunn Drive, Sarasota, FL 34233, USA.

Books Received

Massa, B. (Ed) 1985. *Atlas Faunae Siciliae – Aves.* Il Naturalista Siciliano. Vol IX. Numero speciale. Pp. 1–242. 18 black-and-white habitat photographs and 92 breeding species illustrated in colour from Dresser (Vol 8. 1871–1881). Organo dell Societa Siciliana di Scienze Naturali, Palermo, Sicily. No price given. 240 x 165 mm.

"This Atlas is a small contribution to the European Atlas of breeding birds and to the preservation of nature in Sicily". So states the English introductory paragraph, but in fact the work is far from small. It is a comprehensive account with maps of the habitat and distribution of 124 proved breeding birds and 7 possibles (each has a brief but succinct summary in English) researched for the 5 years 1979-1983. Comparison is also made with past distribution. Presently endangered species are not mapped but a lengthy appendix analyses a "red list" of breeding species. Brief English précis are very helpfully inserted throughout the text. An invaluable base for future estimation of the avifauna of Sicily, which will be companioned by the B.O.U. Check-list 'The Birds of Sicily' by Dr Bruno Massa and C. Iapichino due at the end of 1988.

Hill, M. & Langsbury, G. 1987. *A Field Guide to Photographing Birds in Britain and Western Europe*. Pp. 1–251. Plentifully illustrated with diagrams and with colour photographs. Hard covers, Collins. £12.95. 19 x 13 cm.

Aims at encouraging better photography technically by the average birdwatcher with photographic intentions. This is combined with a detailed geographical guide to specific localities in towns, on coasts and islands, at inland freshwaters, in forest and open country on heath and moorland and mountain regions embracing the UK and western Europe – areas where increasing experience and success, as well as good birdwatching, can be gained. An important chapter is on 'Ethics and the Law' and there is a comprehensive survey of equipment as well as techniques. The coloured photographs are mostly quite outstanding.

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Papers from Club Members or non-members, should be sent to the Editor, Dr J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely to the *Bulletin*. They should be typed on one side of the paper, with double-spacing and a wide margin, and submitted with a *duplicate copy on airmail paper.* Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. ". . . catches wasps (B. Eater)", but "B.B.C. Gull informs me that . . .". Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction. Authors are requested to give their title, initials, name and full address (in the form they wish to be corresponded with) at the end of the paper.

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BULLETIN

of the

BRITISH ORNITHOLOGISTS' CLUB

EDITED BY

Dr J. F. MONK

Volume 108
1988

PREFACE

Volume 108 contains 208 pages, almost the first time that the double century has been achieved in a non-celebratory year. Again it is due to the welcome amount of high standard contributions from around the world and to the continued buoyancy of the Club's finances and its excellent membership. Out of 51 papers published, 43% were on Systematics and Taxonomy, world wide. It is therefore more than regrettable that the Trustees of the British Museum (Natural History) have decreed the abandonment of any research by their own staff at the Sub-Department of Ornithology at Tring. The new Director, Dr Neil Chalmers, is on record (*The Guardian,* 8 November '88) as stating that " . . . given its finite resources the Museum thinks that the most exciting research developments that its own staff should be getting involved in are not, at the moment, in ornithological taxonomy. They are in other areas" and mentions DNA as a whole new dimension to their work. "It will give a further handle on the relationships between the groups in our collection"—but apparently not in ornithology. Why?

Ornithology, which has so often given a lead in new approaches to Systematics, is being treated once again, as it was perhaps some 130 years ago, as the Cinderella of the Natural Sciences. If ever a modern Rothschild and Hartert combination was needed at Tring, it is certainly today.

I am grateful as always for the unstinting help of referees, often amusingly and revealingly given. J. H. Elgood has continued his excellent work compiling the Index and the Hon. Secretary and Hon. Treasurer have gone to great trouble to produce a complete and up to date List of Members.

This is the first volume published by Henry Ling at the Dorset Press, Dorchester, and I am particularly grateful to Keith Horwell for allowing me to persuade him to accept some of the conventions to which I have for so long been accustomed and with which he was not always familiar. It will have been noticed that the *Bulletin* has been produced in recognisably just the same guise, something that is less easily achieved in a first issue than may be realised. The Club is most grateful for the Press's attentive co-operation.

J. F. Monk (Editor)

CORRIGENDA

1987

Index *Jynx ruficollis striaticula* Clancey: delete *subsp. nov.*
Index *Jynx ruficollis cosensi* Grant: delete *subsp. nov.*
Index *Jynx ruficollis pulchricollis* not *J. r. pulchrirostris* and delete *subsp. nov.*
Index *pulchricollis, Jynx ruficollis* (*q.v.*) not *pulchrirostris*

1988

p. 19, line 2: *melanophris* not *melanophrys*
p. 20, line 15: *Tangara* not *Tanagra*
p. 24, Table 2: *perdix* not *Perdix* under both Males and Females
p. 34: 15 lines from foot: *Petrochelidon andecola* not *P. andecolus*
p. 41, 5th species heading: *oryzivorus* not *oryziborus*
p. 43, 2nd last species: *oryzivorus* not *oryziborus*
p. 92, 10 lines from foot: *leucopyga* not *leucopygia*
p. 92, 8 lines from foot: *megalurulus* not *megalulurus*
p. 108, line 32: *schistaceus* not *schisticaeus*
p. 141, line 13: *senegalensis* not *senegala*
p. 141, 8 lines from foot: *Sarkidiornis* not *Sarkiniornis*
p. 142, line 14: *Sarkidiornis* not *Sarkiniornis*
p. 165, line 31: *Ramphodon* not *Rhamphodon*
p. 167, 6 lines from foot: *Threnetes* not *Therenetes*

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Deaths

The Committee very much regrets to report the deaths of the following Members (see Report of the Committee for 1988): F. Haverschmidt (Member 1965–87), W. H. Phelps, Jnr (Member 1953–1988), L. J. Turtle (Member 1925–1988), T. W. Twiggs (Member 1972–1988).

Resignations in respect of 1988

P. A. Brown, Dr W. G. Downs, R. D. Edwards, S. Haywood, A. J. Holcombe, D. Lemmon, C. P. Mignone, L. G. Noren, R. J. O'Connor, W. H. D. Wince; and 1987: A. Graham.

Removed from membership under Rule (7) (previously Rule (4))

P. R. J. Allen, M. H. Andrews, Rev. P. J. Brindle, R. K. Brooke, J. F. Colebrook-Robjent, A. Dzubin, I. R. Haynes, M. Holman, G. C. Ireland, P. F. R. Jackson, R. A. C. Key, W. J. Lawson, V. L. Parker, W. F. Pegram, Mrs M. J. Reynolds, J. E. Robson, M. G. Rockett, K.-H. Schmidt, N. M. Shennan, C. Slator, C. F. Snook, D. H. Welch, C. E. Wells and P. J. Wycherley.

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1985 Tucker, W. T.; 61 Main St, KINGSTON, NH 03848–3209, **USA**
1974 Tunks, I. D. A.; Dept. of Biological Sciences, Portsmouth Polytechnic, King Henry I Street, PORTSMOUTH, Hants
1984 Turner, B. C.; Uplands, Green Lane, Raymonds Hill, AXMINSTER, Devon EX13 5TD
1986 Turner, C. F.; Lakers, Church Road, St Johns, REDHILL, Surrey RH1 6QA
1970 Turner, D. A.; PO Box 48019, NAIROBI, **Kenya**
1986 Tutt, D.; 27 Seaview Road, GILLINGHAM, Kent ME7 4NL
1985 Tye, Dr A.; 2 School Lane, King's Ripton, HUNTINGDON, Cambs PE17 2NL
1974 Tyler, Dr S. J.; Yew Tree Cottage, Lone Lane, PENALLT, Gwent

1985 Underwood, Ms D. D.; Urb. Soto de Vinuelas, Peidrafita 188, El Goloso (MADRID), **Spain**
1975 Urban, Prof. E. K.; Dept. of Biology, Augusta College, AUGUSTA, GA 30910, **USA**

1982 van den Berg, A. B.; Duinlustparkweg 98, 2082 EG SANDPOORTE-ZUID, **Netherlands**
1987 Veling, Dr E. J. M.; J.M. Coenenstraat 31–II, 1071 WE AMSTERDAM, **Netherlands**
1934 Vincent, Col. J.; PO Box 44, Mooi River, 3300 NATAL, **South Africa** (*Hon. Life Member*)
1981 Violani, Dr C. G.; Via S. Vittore 38/A, 20123 MILAN, **Italy**
1976 Vittery, A.; The Saltings, Coast Road, Cley-next-the-Sea, HOLT, Norfolk NR25 7RZ
1976 Voous, Prof. K. H.; V. D. Duyn van Maasdamlaan 28, 1872 EM HUIZEN, N.H., **Netherlands**

1979 Walker, R. L.; 5 Beech Avenue, Hulland Ward, ASHBOURNE, Derbyshire DE6 3FF
1985 Wall, J. W.; 76 Brambach Road, SCARSDALE, NY 10000583, **USA**
1986 Walmsley, M. A.; Woodpeckers, Broughton, STOCKBRIDGE, Hants SO20 8BD
1968 Walsh, J. F.; 80 Arundel Road, LYTHAM ST ANNES, Lancs
1969 Walters, M. P.; Sub-Dept. of Ornithology, British Museum (Natural History), TRING, Herts HP23 6AP
1986 Wang, Dr Ying; Institute of Biology, College of Science, National Taiwan Normal University, 88 Sect, 5 Roosevelt Road, TAIPEI, **Taiwan** 11718
1975 Warham, Dr J.; 14 Konini Street, CHRISTCHURCH 4, **New Zealand**
1984 Warr, Mrs F. E.; 6 Mansion Drive, TRING, Herts HP23 5BD
1985 Warriner, R. E.; 9 Bucklands View, Nailsea, BRISTOL BS19 2TZ
1981 Watling, R. J.; Aqua Foods Fiji, PO Box 9269, NANDI AIRPORT, **Fiji**
1986 Webster, B. D.; 17 Prentice Court, Goldings, NORTHAMPTON, NN3 4XS
1967 Weir, The Hon. J. V.; 85 Whitehall Court, LONDON SW1A 2EL
1985 Welch, G. R.; 21a East Delph, WHITTLESEY, Cambs PE7 1RH
1975 Wells, Dr D. R.; Dept. of Zoology, University of Malaya, 59100 KUALA LUMPUR, **Malaysia**
1986 Westoll, J.; Dykeside, Longtown, CARLISLE, Cumbria CA6 5ND
1985 Wheatley, J. J.; 6 Boxgrove Avenue, GUILDFORD, Surrey GU1 1XG
1973 Wheeler, C. E.; 3 Woodhurst Close, Cuxton, ROCHESTER, Kent (*Committee 1975–1979*)
1988 Wheeler, Mrs G. F.; Pumlani, Otters Creek, ZEEKOEVLEI 7945, **South Africa**
1987 Wheeler-Holohan, B. J.; 38 Oregon Square, ORPINGTON, Kent BR6 8BQ
1980 White, Lt.-Col. T. C.; 6c Rosebery Avenue, HARPENDEN, Herts AL5 2PL
1984 Wiersma, L. J.; Singel 282, 3311 HK DORDRECHT, **Netherlands**
1986 Wigley, M. W.; 9 Elm Street, COLNE, Lancs BB8 0RQ
1982 Wilkinson, Dr R.; 2 Weston Grove, UPTON-BY-CHESTER, Cheshire CH2 1QJ
1987 Wilkinson, W. H. N.; 119 Castelnau, Barnes, LONDON SW13 9EL
1987 Willett, D. R.; 18 Main Street, Newbold Verdon, LEICESTER LE9 9NL
1986 Williams, Dr E. J.; 24 Birkett Drive, ULVERSTON, Cumbria LA12 9LS
1951 Williams, J. G.; 14 Tyne Road, OAKHAM, Rutland LE15 6SJ
1988 Williams, K. F.; 28 Falconers Close, DAVENTRY, Northants NN1 5PR

1985 Wilson, H. E.; PO Box 10463, marine parade 4056, **South Africa**
1985 Wilson, J. D.; 8 Haworth Grove, Heaton, bradford, W. Yorks, BD9 5PE
1976 Wilson, R. T.; Bartridge House, umberleigh, Devon EX7 9AS
1987 Winfield, K. W.; 7 Burlington Road, skegness, Lincs PE25 2EW
1986 Wolsey, R. P. S.; 26 Endurance Avenue, stanley, **Falkland Islands**
1976 Wood, J. B.; Zoology Dept., University College London, Gower Street, london WC1E 6BT
1985 Wood, V. J.; PO Box 401, dalby, Queensland 4405, **Australia**
1961 Woodcock, M. W.; The Fives, Elderden Farm, Staplehurst, tonbridge, Kent (*Hon. Secretary 1965–1969*)
1987 Woods, R. W.; 68 Aller Park Road, newton abbot, Devon TQ12 4NQ
1984 Woodson, J. L.; 410 North 600 East, logan, Utah 84321, **USA**
1984 Woodward, F. R.; c/o Dept. of Natural History, Museum & Art Gallery, Kelvingrove, glasgow G3 8AG
1986 Woolfall, S. J.; BTO, Beech Grove, tring, Herts, HP23 5NR
1983 Wright, A. A.; 7 Fairhurst Drive, Parbold, wigan, Lancs WN8 7DJ

1988 Ziegler, A. P.; Titcombs, Sheep Street, burford OX8 4LT
1963 Ziswiler, Prof. Dr V.; Zoological Museum of the University of Zurich, Kunstlergasse 16, CH 8006, zurich, **Switzerland**
1973 Zonfrillo, B.; 28 Brodie Road, glasgow G21 3SB

BRITISH ORNITHOLOGISTS' CLUB

(Founded 5 October 1892)

TITLE and OBJECTS

The objects of the Club, which shall be called the "British Ornithologists' Club", are the promotion of scientific discussion between Members of the British Ornithologists' Union and others interested in ornithology, and to facilitate the publication of scientific information connected with ornithology.

RULES

(Approved by the Annual General Meeting on 10 May 1988)

MEMBERSHIP

(1) (a) Any Member of the British Ornithologists' Union may become a Member of the Club on payment to the Honorary Treasurer of the annual subscription.

(b) A Member who ceases to be a member of the British Ornithologists' Union shall also cease to be a Member of the Club, unless the Committee shall decide it is in the interests of the Club to permit him to remain a Member.

(2) A Member who has an unbroken membership of the Club for fifty years shall become a Life Member and shall not be required to pay any further annual subscriptions.

(3) If the conduct of any Member shall be deemed by not less than five members of the Committee present at a meeting of the Committee to be prejudicial to the interests of the Club, that Member shall (a) be so informed by a letter from the Honorary Secretary and (b) be given an opportunity of appearing in person before the Committee to explain his conduct. The Committee shall have power to terminate his membership forthwith (i) if not less than five members of the Committee present when he appears before it are not satisfied with his explanation, or (ii) if he does not appear before the Committee in person, but gives an explanation which not less than five members of the Committee deem to be unsatisfactory, or (iii) if no explanation has been received from him within twenty-eight days of the dispatch of the Honorary Secretary's letter to him.

MANAGEMENT

(4) The affairs of the Club shall be managed by a Committee, elected from among the Members, which shall consist of a Chairman, elected for a term of four years, a Vice-Chairman, elected for a term of four years, an Editor of the *Bulletin*, elected for a term of four years, an Honorary Secretary, elected for a term of one year, and an Honorary Treasurer, elected for a term of one year. There shall be four other members of the Committee, each of whom shall be elected for a term of four years. With the exception of the Editor, the Honorary Secretary and the Honorary Treasurer, the Officers and other members of the Committee shall be ineligible for re-election within one year to the same office or position. For the purpose of this Rule, the period of a year shall be reckoned from one Annual General Meeting until the next, or, in the case of an Officer or other member of the Committee

elected at a Special General Meeting, from that Special General Meeting until the next Annual General Meeting. The term for which an Officer or other member of the Committee is elected shall expire at the close of the Annual General Meeting, unless it is adjourned, in which case it shall expire at the first adjournment after the election of a successor. Except as otherwise provided by these Rules, a quorum of the Committee shall be three members.

(5) The names of Officers and other members of the Committee nominated by the Committee shall be circulated at least three weeks before the relevant Annual or Special General Meeting. Any Member wishing to nominate a candidate shall forward to the Honorary Secretary his nomination in writing signed by himself and another Member with confirmation that the candidate has agreed to be nominated. Such nomination shall reach the Honorary Secretary not less than 14 days before such a General Meeting. Elections shall be by a simple majority of those present and voting at a General Meeting.

(6) A Member wishing to complain of the manner in which affairs of the Club are conducted must communicate his complaint in writing to the Chairman, who will raise the complaint as soon as practicable at a meeting of the Committee for a decision or, if he considers it a matter of urgency, will call a meeting of the Committee specially to consider it.

SUBSCRIPTION

(7) The rate of annual subscription shall be fixed by the Committee from time to time. The subscription shall be due for payment on the first day of January in every year. The Committee shall be entitled to terminate the membership of any Member whose subscription has not been paid within six months of it falling due, provided that such member has been given written notice by the Honorary Treasurer calling upon him to pay the subscription and has not complied with that notice within one month of its date.

(8) When any Member, who is not an Officer or other member of the Committee, has rendered or is rendering the Club any service, the Committee may, if it deems it appropriate, waive the subscription due from that Member for any year or years.

(9) Members joining the Club in October, November or December may elect for their first annual subscription to run until the end of the next calendar year.

MEETINGS

(10) The Club shall meet not less than four times a year at times and places to be arranged by the Committee, in furtherance of the Objects of the Club.

(11) Members may introduce guests at any ordinary meeting of the Club and members of the British Ornithologists' Union who are not Members of the Club may, without any such introduction be permitted at the discretion of the Honorary Secretary to attend any one ordinary meeting during any calendar year, except that no former Member, who has had his membership terminated for any cause and who has not been reinstated, shall be allowed to attend a meeting without the permission of the Chairman or, in his absence, the Vice-Chairman.

(12) The Annual General Meeting of the Club shall be held in April or May every year on a date to be fixed by the Committee. At this Meeting the business to be transacted shall be to receive and consider the Report of the Committee and the Accounts of the preceding calendar year, the regulation of matters having reference to the *Bulletin*, the election of Officers and other members of the Committee and any other business of which notice in writing shall have been given to the Honorary Secretary prior to 28 February in the same year. Notice of at least three weeks shall be given by the Committee of every Annual General Meeting.

(13) A Special General Meeting may be called by the Committee for any purpose which it deems to be of sufficient importance or at the instance of a requisition signed by at least 15 Members, stating the purpose for which the Meeting is being requisitioned and sent to the Honorary Secretary. Notice of at least three weeks shall be given of a Special General Meeting and the notice convening it shall state the purpose of the Meeting: no other business may be transacted at the Meeting.

'BULLETIN' OF THE CLUB

(14) (a) A journal under the title of the 'Bulletin of the British Ornithologists' Club' shall be published not less than four times per year and one copy shall be distributed gratis to every Member who has paid the current annual subscription, subject to Rule 14 (b).

(b) Members shall receive copies of all isues of the *Bulletin* published in the year in which they join the Club provided they do not join in October, November or December and elect for their first subscription to run until the end of the next calendar year, in which case they shall receive copies of all issues published after their date of joining.

(15) No communication, the whole or any important part of which has already been published elsewhere, shall be eligible for publication in the *Bulletin,* except at the discretion of the Editor

TRUST FUND

(16) Subject to the terms of any bequest or gift, any stocks, shares, other securities, money or other property (whether real or personal) from time to time belonging to the Club may be vested in trustees for the Club if the Club shall by a Special Resolution so decide. Such Special Resolution shall appoint Trustees and shall specify the trusts under which the property is to be held.

AMENDMENT OF RULES

(17) These Rules or any of them may be revoked or amended and any new rule or provision may be substituted or added by a Special Resolution.

INTERPRETATION

(18) In these Rules a "Special Resolution" means a resolution passed by a majority of not less than three fourths of the members voting thereon at an Annual or Special General Meeting of the Club of which not less than two weeks' notice specifying the intention to propose the resolution as a Special Resolution has been given.

(19) In these Rules "Member" means a Member of the Club, unless the context otherwise requires.

LIST OF AUTHORS AND CONTENTS

INDEX TO SCIENTIFIC NAMES

(Compiled by J. H. Elgood)

All generic and specific names (of birds only) are indexed. New subspecific names are indexed in bold print under generic and specific names. Other subspecies of special interest are also included.

ISSN 0007-1595

Bulletin of the

British Ornithologists' Club

Edited by
Dr J. F. MONK

Volume 108 No. 1 March 1988

FORTHCOMING MEETINGS

Tuesday, 10 May 1988 at 6.20 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7. **Dr Euan Dunn** will speak on **"A Year in the Life of Terns".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on Tuesday, 26 April, if possible*.

Dr Dunn, of the E.G.I. at Oxford and one of the editors of *Birds of the Western Palearctic*, will speak specially on terns in their winter quarters and their conservation.

Tuesday, 7 June 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7. **Dr Alan Tye** will speak on **"The Islands of São Tomé and Principe and their Birds".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the **HON. TREASURER** at 53 OSTERLEY ROAD, ISLEWORTH, MIDDLESEX TW7 4PW by first post on Tuesday, 24 May, if possible*.

São Tomé and Principe are in the Gulf of Guinea and notable for the number of their endemics. Dr Tye visited them on behalf of the I.C.B.P. last year, after a period of a number of years during which entry was not permitted.

Monday, 11 July 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7. **Dr Clive Elliott** will speak on **"The Quelea Problem in Africa".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the **HON. TREASURER** at 53 OSTERLEY ROAD, ISLEWORTH, MIDDLESEX TW7 4PW by first on Monday, 27 June, if possible*.

Dr Elliott, an expert on the Quelea, which he has studied in East Africa for F.A.O. for a number of years, will speak on the birds themselves, including e.g. migrations, multiple breedings, and on control of their numbers.

Tuesday, 20 September 1988 at the same place, **Miss C. T. Fisher** will speak on **"Australian Birds".**

In the second week of October or the first half of December **Dr David Peakall** will speak on **the effects of pollution by toxic chemicals in the Great Lakes.**

*It will be possible to take acceptances up to the weekend before a Meeting, but Members are asked to accept by 14 days before a Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

A plan showing Imperial College will be sent to Members who request it when sending their acceptance for a Meeting.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 108 No. 1 Published: 19 March 1988

REPORT OF THE COMMITTEE FOR 1987

Meetings. During the year 6 meetings were held. The one arranged for January had to be postponed because of difficulties arising from extremely heavy snowfalls E. and S.E. of London, and took place in June. All meetings were at Imperial College in South Kensington.

Attendances for the year totalled 186, slightly more than 10 years previously. Meetings are an integral part of the life of the Club, as they provide an opportunity for members to converse on matters of common interest as well as for them to hear the speakers. Members who have suggestions for changes that would draw them to meetings are invited to pass their views to the Hon. Secretary.

The Committee met 5 times in the year and the average attendance of members was 78%. Among other matters, a new membership recruitment leaflet was produced, copies of which were enclosed in *Ibis* of October 1987, and new Rules were drafted, which will be proposed for adoption at the Annual General Meeting.

Deaths. It is with very great regret that the Committee reports the deaths of Dr Salim Ali, D.Sc., member 1987, Miss S. Vere Benson (Mrs Wynne Taylor), member 1948–1987 and Mr Stanley Cramp, O.B.E., member 1972–1987. Miss Benson was known to members both from her attendance at meetings and as author of *Birds of Lebanon and the Jordan Area*. Stanley Cramp and Dr Salim Ali were both well known internationally and obituaries of them have appeared in the British daily press.

Membership. In 1987 there were 44 new members; 5, who were in arrears at the end of 1986, paid up to date in 1987. There were 13 resignations and 29 failed to pay their subscriptions in the year. Paid-up membership at the end of the year was 570 (354 with U.K. addresses 216 with overseas addresses), an increase of 4 in the year and a record number. During the year 9 members were struck off, not having paid their subscriptions due in 1986.

Bulletin sales. Non-member subscriptions to the *Bulletin* fell by 4 in the year to 149 (21 U.K., 128 overseas); there were 9 new subscribers, but 13 lapsed.

We are very much indebted to Mr M. P. Walters, who has taken charge of the stock of *Bulletin* back numbers since 1984, and are most grateful to him for all he has done. He has been unable to continue because of pressure of work and Mrs F. E. Warr kindly took over from him in September 1987.

A substantial number of back numbers were reprinted in 1987; complete runs back to Vol. 35 (1914–1915) and most earlier issues can now be supplied.

The Bulletin. Volume 107 consisted of 192 pages, 12 pages more than in 1986, which itself was 36 pages more than published in 1985—the equivalent of one whole extra issue. Nevertheless, the waiting time for authors for publication of their papers in some cases extended to 12 months. 40 papers were presented by 56 authors, some of whom presented more than one. Their countries of origin were as follows: USA (29), UK (8), Belgium (3), South Africa (3), Brazil (2), Denmark (2), France (2), and one each from Australia, FRG, Italy, Kenya, The Netherlands, New Zealand and Switzerland. The geographical areas covered were even more far flung (one paper unless otherwise stated): Greece, the Mediterranean, Middle East, India, Borneo, Java, Malaysia, Sulawesi, New Guinea, the Pacific (3), Alaska, Panama, Bolivia (3), Brazil (3), Colombia, Ecuador, Peru (2), Venezuela, E. Africa (4), South Africa, W. Africa, the Afrotropics (2), Sudan, Tanzania, Zaire (2), Madagascar, World-wide. It will be noted that papers from South America and Panama, where so much avifaunal work is being done by American institutions and individuals, amounted to 12, and those from Africa, which has so preponderantly filled the pages of the *Bulletin* until the recent past, amounted also to 12, while there were 8 from the Pacific and S.E. Asia. These developments in coverage of world ornithology are extremely gratifying and welcome. With the continuing supply of a high standard of submitted papers, it is hoped to continue to publish an increased number of pages in 1988 in order to keep the pre-publication waiting time for authors as short as possible.

For financial reasons the Club is leaving Caxton & Holmesdale Press, with which it has had a most excellent relationship since they began printing the *Bulletin* in October 1953. For his perceptive and friendly co-operation over many years, the Club is particularly grateful to Mr Peter Ball.

Finance. The accounts for 1987 are not yet available. They will be tabled at the Annual General Meeting and published afterwards in the *Bulletin*. Members wanting copies before the Annual General Meeting should notify the Hon. Treasurer.

General. Ten years ago the Report gave some figures, which are here brought up to date as showing trends during a period of increasing interest in ornithology but of horrifying, though improved, financial inflation in the United Kingdom.

	Members	Non-member *Bulletin* Subscribers	*Bulletin* pages published (Inc. index)	*Bulletin* Publication costs Total	Per page	Members' subscription rate Equivalent in £	Swiss Francs	US$
1952	185	65	118	£346	£2·95	1·05	12·85*	2·92*
1977	293	140	152	£2320	£15·26	3·50	14·60*	5·96*
1987	570	149	211	£6879	£32·60	5·50	13·18*	8·19*

*At exchange rate at beginning of year, excluding bank charges

ANNUAL GENERAL MEETING

The 1988 Annual General Meeting of the British Ornithologists' Club will be held in the Senior Common Room, Sherfield Building, Imperial College, London, S.W.7 at 6 p.m. on Tuesday, 10 May 1988.

AGENDA

1. Minutes of the 1987 Annual General Meeting (see *Bull. Brit. Orn. Cl.* 107: 45).
2. Report of the Committee and Accounts for 1987.
3. The *Bulletin*.
4. Election of Officers. The Committee proposes that:—
   (a) Mrs D. Bradley be re-elected Honorary Treasurer,
   (b) Mr R. E. F. Peal be re-elected Honorary Secretary,
   (c) Mr R. H. Kettle be elected a member of the Committee *vice* Mr K. F. Betton, who retires by rotation.
5. The following resolution will be proposed as a Special Resolution in terms of Rule (13) of the Club's Rules:
   That the redrafted Rules of the Club initialled and dated by the Chairman for the purposes of identification be approved.
6. Any other business of which notice shall have been given in accordance with Rule (7).

By Order of the Committee,
RONALD E. F. PEAL *Honorary Secretary*

NOTES ON ITEM 5

The Objects and the Rules of the Club have been amended from time to time during the 95 years of the Club's existence. Parts are now obsolete and in other places the wording needs to be clarified. The Committee has therefore decided to redraft them.

As the redrafted Rules are the subject of a Special Resolution, any member wishing to propose any one or more amendments to them at the Annual General Meeting must notify the Honorary Secretary in writing not less than 2 weeks before 10 May 1987 of the exact terms of his amendments. *Copies of the redrafted Rules will be available for members at the Annual General Meeting and members who wish to be sent a copy before then should write to the Honorary Secretary,* stating whether they wish to be sent also a copy of the present Rules.

The present Rules were last published in the Index to Vol. 102 (for 1982) of the *Bulletin* at pp. iii–v; the only subsequent amendment has been to remove the restriction upon re-election of the Editor. The main changes effected in the redrafted Rules are described below.

MANAGEMENT

The term for which the Chairman, Vice-Chairman and Editor are elected would be 4 years in all cases: currently they are 3 years for Chairman and Vice-Chairman and 5 years for Editor. The 4 members of the Committee who are not officers will be elected for a 4 year term; at present the senior of these retires each year, so that their maximum term is 4 years, but is less if a more senior one leaves before retiring by seniority, an anomaly which is considered undesirable.

MEMBERSHIP

The Committee will be allowed to waive the subscription of any member who has rendered or is rendering services to the Club otherwise than as an officer or other member of the Committee. The same result can be achieved under the existing Rules but it is considered desirable to make this explicit.

All reference to Associate Members, a type of membership which does not now exist, is deleted.

MEETINGS
The privilege accorded members of the British Ornithologists' Union resident in the British Isles of attending one Club meeting a year at the discretion of the Honorary Secretary, without being invited as a guest or having to become a Club member, will be extended to all members of the Union, wherever resident. The existing provision permitting ornithologists resident overseas, including Union members so resident, to attend Club meetings and to bring guests for up to a year at a time without being invited as a guest or becoming a Club member is to be rescinded; this provision has become an anomaly with the passage of time.

The restriction at present upon the number of times a year that a Club member may bring the same guest to Club meetings is to be removed, as being no longer wanted.

The notice convening a Special General Meeting will have in future to state the purpose of the meeting and no other business may be transacted at it. At present officers and other members of the Committee may be elected only at an Annual General Meeting and it is proposed to make it permissible to make elections to such offices at a Special General Meeting, so that vacancies may, if necessary, be filled without undue delay.

BULLETIN OF THE CLUB
The existing Rule empowering the Committee to supply to contributors free copies of the *Bulletin* will be rescinded as obsolete: separates are nowadays supplied to authors and it is considered that the general powers of management of the Committee enable it to deal with such matters.

The seven hundred and seventy-fifth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 24 November 1987 at 7 p.m. The attendance was 20 Members and 10 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), J. S. M. Albrecht, Miss H. Baker, P. J. Belman, Mrs Diana Bradley, Dr H. Q. P. Crick, J. H. Elgood, Miss C. T. Fisher, A. Gibbs, D. Griffin, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, P. J. S. Olney, R. E. F. Peal, G. Z. Rowe, R. E. Sharland, N. H. F. Stone and A. R. Tanner.

Guests present were: D. Bradley, P. Bull, Dr R. J. Chandler, Mrs P. Geater, Mrs B. Gibbs, Mrs I. McCulloch, P. J. Moore, Dr D. T. Parkin, Mr and Mrs G. H. Searle.

Dr D. T. Parkin gave an address on 'Genetic fingerprinting of wild birds—a new way of looking at bird populations' and an interesting discussion ensued. An abstract of his address will be published in a future number of the *Bulletin*.

Distribution and numbers of the Masafuera Rayadito *Aphrastura masafuerae* on Isla Alejandro Selkirk, Juan Fernandez archipelago, Chile

by M. de L. Brooke

Received 2 March 1987

Endemic to Isla Alejandro Selkirk (33°45'S, 80°45'W) in the eastern Pacific Juan Fernandez archipelago, c. 500 miles off the coast of Chile, the Masafuera Rayadito *Aphrastura masafuerae* is an exceptionally poorly known furnariid. Described by Philippi & Landbeck (1866, *in* Johnson 1967), whose collectors found it in "small flocks in woods" (*in* Sclater

1871), it was subsequently reported as scarce by the Swedish Pacific Expedition of 1916/17. Bäckström, the expedition's zoologist, thought it confined to the higher parts of Isla Alejandro Selkirk clad in *Dicksonia* fern forest (Lönnberg 1921). In 1928 Dr R. A. Philippi saw 3, but in 1955 W. R. Millie failed to find the species (Johnson 1967). Concern for the species' continued existence (Vaurie 1980) was dispelled in 1983 when, after a gap of 55 years, W. R. P. Bourne (1983) saw 4 and heard others in fern forest.

The preceding paragraph summarizes the entire stock of knowledge of this rayadito, a species quite distinct from *A. spinicauda* of the Chilean mainland. *A. masafuerae* has never been met on the other Juan Fernandez islands, Robinson Crusoe or Santa Clara. Some local islanders on Isla Alejandro Selkirk do know the rayadito, but it is certainly not a familiar bird. The aim of the present study was to assess the species' abundance and habitat preference and to make other observations of relevance to its conservation.

Methods

During my visit, 14 January to 17 February 1986, as much of Isla Alejandro Selkirk was visited as the rugged terrain allowed. All rayadito observations were mapped and then a grid of 500 × 500 m squares (arbitrary origin) superimposed upon the map. Figure 1 is the resultant map of rayadito distribution by 25 ha blocks. The map takes no account of the fact that some squares were visited more frequently than others, some only once, with consequent differences in the likelihood of detecting rayaditos.

There is no satisfactory contoured topographical map of Isla Alejandro Selkirk. Altitudes given here are those provided at the time by the altimeters of the American Chilean Botanical Expedition. These altitudes may differ from those on published maps.

Attempts to catch rayaditos were unsuccessful, partly because they were not attracted to tape recordings. It was therefore impossible to establish home ranges and densities by colour-ringing. As an alternative, the route from B (the point where the path up the south side of Quebrada Vacas joins the main north-south ridge – Fig. 1) to Los Innocentes peak was walked 4 times in each direction between 17 January and 2 February noting all rayaditos heard or seen within 200 m of this ridge-top route. The proportion of rayaditos detected on one walk but not on a subsequent one was used to estimate the total number of birds in the 400 m wide strip. Of necessity it had to be assumed that, at least within the study period, birds remained within a static home range, but the assumption could not be critically tested. However, rayaditos living close to my camp site could predictably be located regularly in particular areas of fern forest, so I believe the assumption holds good.

Results

Distribution

The Masafuera Rayadito was recorded (Fig. 1) in 33 of the 25 ha blocks, all at higher parts of the island. The lowest altitude at which the species

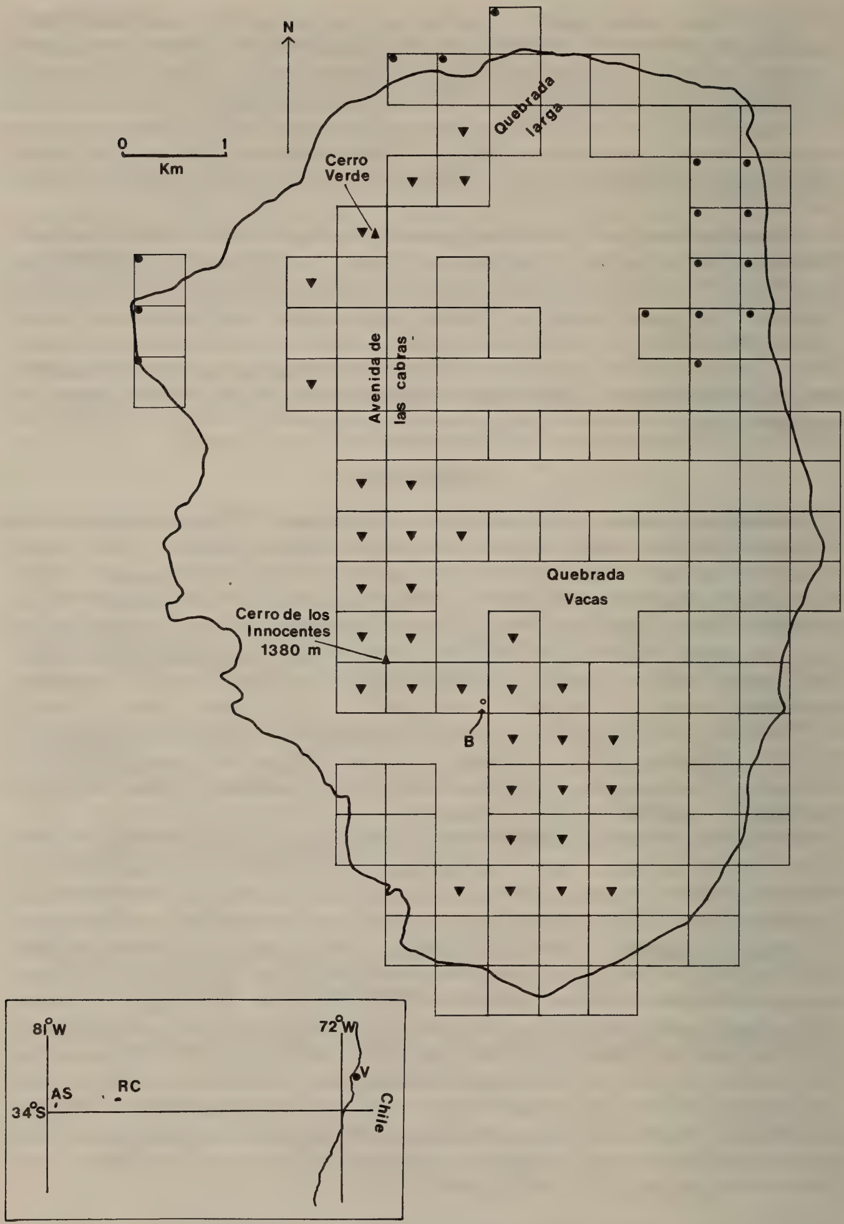

Figure 1. A map of Isla Alejandro Selkirk, Juan Fernandez archipelago, showing the distribution of the Masafuera Rayadito *Aphrastura masafuerae* by 500 × 500 m squares. Squares visited and no rayadito recorded contain no symbols. Squares visited and rayadito(s) recorded contain a central filled triangle. Squares not visited but seen from land and/or sea to be totally unsuitable for rayaditos (e.g. bare rocky cliffs) contain a filled circle top left. Blank areas were not visited. Inset shows position of Islas Alejandro Selkirk (AS) and Robinson Crusoe (RC) in the eastern Pacific west of continental Chile and Valparaiso (V).

was recorded was 600 m in Quebrada Larga at the north end of the island, and the highest at 1300 m near the summit of Los Innocentes. Although doubtless influenced by the fact that I spent more time on the high ground of the southern half of the island, the concentration of observations above 900 m in the area around and immediately to the south of Los Innocentes is probably an accurate reflection of the birds' distribution. In particular the birds were not met on the plateau of Avenida de las Cabras to the south of Cerro Verde at an altitude of 1000-1100 m.

Contrary to Lönnberg (1921) the Masafuera Rayadito was by no means confined to the *Dicksonia externa* fern forest, which occurs between 800 m and 1150 m to the south of Los Innocentes and which is the main nesting habitat of the petrels *Pterodroma e. externa* and *P. longirostris* (Brooke 1987). At higher altitudes and to the north of Los Innocentes the rayadito occurs in the absence of *Dicksonia,* though always, in my experience, where there was nevertheless a complete fern cover of *Lophosauria quadripinnata*. Where the fern cover was broken up into clumps by patches of *Rumex acetosella* and *Anthoxanthum odoratum,* for instance on Avenida de la Cabras, there were no rayaditos.

Density and population estimates

Rayaditos were met either singly or in pairs (the sexes are similar), but never in flocks. Seventy-seven different individuals were recorded during fieldwork. This figure is undoubtedly below the island population which I now attempt to estimate.

On the 4-times walked 1250 m long route between B and Cerro de Los Innocentes peak, 13 apparently different rayaditos were detected. By the fourth walk on 2 February, when 6 were detected, only 4 of them had been noted on previous walks. A simple calculation ($13 \times 6/4$) suggests a total of 19.5 birds along the route. Alternatively, the highest number of birds (6) was recorded on the walks of both 17 January and 2 February. Two birds were common to both walks. A similar calculation ($6 \times 6/2$) suggests 18 birds along the route. If 20 rayaditos live in 1250×400 m^2, the mean home range is 25,000 m^2 or 2.5 ha.

This very rough calculation implies about 10 birds per occupied 25 ha square. Thirty-three occupied squares are mapped, suggesting a minimum population on the island of 330 birds. There are 26 squares that were not visited (and therefore not mapped in Fig. 1) and which share a border with one or more of the 33 squares where rayaditos were observed. If all of these squares also held 10 rayaditos, the island population rises to 590 birds. These rough calculations point to an island population around 500. The population probably does not exceed 1000 birds.

General observations

No nests were found and no family parties seen. The only evidence of breeding was an adult carrying food on 2 February, but the bird was not followed on its return to any presumed nest site or fledglings.

Most birds were detected not by sight but by their churring call (Fig. 2). Tape recordings showed that each call, containing about 17–18 similar units lasts around 1–1.2 secs. The call is normally repeated once every 4–5 secs.

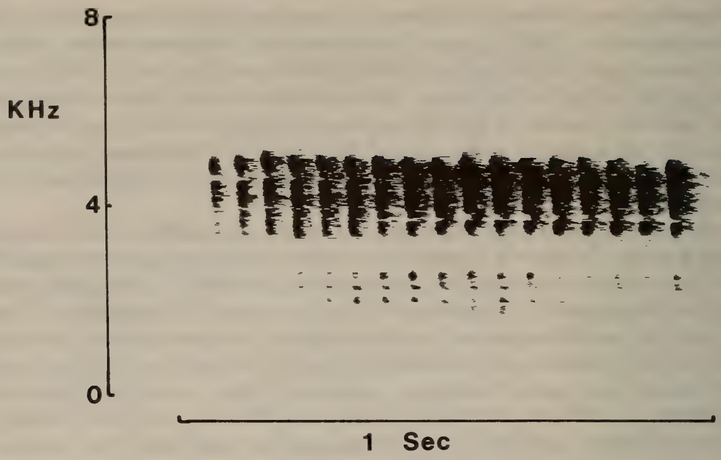

Figure 2. Sonagram of the call of the Masafuera Rayadito *Aphrastura masafuerae*. Recording made on a Phillips N-2205 cassette recorder. Sonagram made on a Kay 6061-B Sound Spectrograph using narrow band filter.

The birds, gleaning insectivores, were most readily encountered along stream courses where luxuriant *Dicksonia* grew to a height of 5 m and was intermingled with *Drimys confertifolia*. This may be the rayadito's preferred habitat.

Conclusions

Although *A. masafuerae* is by no means numerous there is little reason to suppose its population has altered substantially in the past century. Earlier still, in the eighteenth century when the island's lower slopes were well wooded (Skottsberg 1953), the rayadito might have lived at lower altitudes than it does today. Its present absence from the low altitude pockets of *Myrceugenia schulzei* woodland does not throw light on this possibility, since the modern woodland is so wholly devoid (due to goats) of the understorey on which the rayaditos would presumably have depended.

The future of *A. masafuerae* is probably secure for as long as large tracts of the ferns *Dicksonia externa* and *Lophosauria quadripennata* remain. Although these ferns are apparently not grazed directly by goats, goat trampling may be slowly acting to open up the areas currently covered by ferns. If this fragmentation of fern forest is proceeding, albeit slowly, it could adversely affect the rayadito as areas presently covered by ferns are transformed into the patchwork of plant types of Avenida de las Cabras where rayaditos are now absent.

Accordingly I recommend a study of the effect of goats on these ferns. Besides its relevance to the future of the rayadito, such a study is long overdue botanically. Although there is evidence of the damaging effects of goats on the endemic vegetation of the Juan Fernandez Islands (Saunders

et al. 1982), the details of which plant species are particularly vulnerable or their rates of disappearance under goat grazing are unknown.

Acknowledgements

This study was made possible by the financial support of the International Council for Bird Preservation, the Fauna and Flora Preservation Society, the World Wildlife Fund (UK) and the Percy Sladen Memorial Fund. My thanks to these organizations, and to the Chilean Corporacion Nacional Forestal for permission to work on Isla Alejandro Selkirk, where the companionship and botanical ability of the Chilean/American Botanical Expedition under Prof Tod Stuessy was much appreciated. Dr M. R. W. Rands helpfully commented on a draft of this paper.

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A new genus for *Sula abbotti*

by Storrs L. Olson and Kenneth I. Warheit

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Abbott's Booby *Sula abbotti* was described from a single specimen taken on Assumption Island, western Indian Ocean, in 1892 by W. L. Abbott (Ridgway 1893). Although once probably found on other islands in the Indian Ocean (Nelson 1974, Bourne 1976, Stoddart 1981) the species is now extinct everywhere except at Christmas Island, south of Java, where Nelson's (1971) study of its behaviour showed it to differ markedly from other species of Sulidae in many respects, and to have a much larger and heavier egg, especially in relation to body size. Bones from Polynesian archaeological sites on Tikopia (a Polynesian outlier of the Solomon Is.) and in the Marquesas show that birds closely related to *Sula abbotti* were widely distributed in the Pacific into very recent times (D. W. Steadman, D. Pahlavan and S. E. Schubel). In addition, it has been suggested that a relict population of a species similar to Abbott's Booby may still exist on Cocos Island in the eastern Pacific (Slud 1967, Nelson 1974).

Our studies of the osteology of the Sulidae confirm the distinctiveness of *Sula abbotti* and show it to be the primitive sister-group of all the remaining Sulidae. Because the fossil record shows that the divergence between gannets (*Morus*) and boobies (*Sula* sensu stricto) had already taken place by the middle Miocene, some 16 million years ago, we must assume that the divergence between *Sula abbotti* and the remaining sulids is older still.

Sula abbotti possesses numerous derived characters within the Sulidae that, by themselves, would not necessarily require the erection of a new genus. However, because the species lacks other derived characters that are shared by *Morus* and *Sula,* it forms a separate primitive clade, and thus, if *Morus* and *Sula* are each recognized at the generic level, which we believe is the correct treatment, then a new genus is needed for *Sula abbotti* as well. The purpose of this note is to make a new generic name available for use in pending studies that include a revision of all living and fossil Sulidae (Warheit in prep.) and the possible description of new species in this group based on archaeological material (D. W. Steadman in prep.).

The following are some of the derived characters that are shared by *Morus* and *Sula* that are not found in *S. abbotti*: the postorbital processes of the skull are reduced and bifurcated (*S. abbotti* retains the primitive long, pointed, ventrally oriented condition); the temporal fossae meet along the midline and are not widely separated as in *S. abbotti* (the polarity of this character has not yet been resolved and may perhaps be derived in *S. abbotti*); the neck of the coracoid between the coraco-humeral surface and the bicipital pit is laterally compressed, but is broad in *S. abbotti*; the brachial depression of the ulna is pneumatic, as opposed to non-pneumatic in *S. abbotti*; and the surface medial to the ligamental tubercle at the distal end of the radius in caudal aspect is pneumatic, but non-pneumatic in *S. abbotti*.

We propose the name

Papasula genus nov.

Type species. *Sula abbotti* Ridgway 1893, the only included species as yet.

Diagnosis. The following diagnostic characters of the species are derived within the family Sulidae. Skull: the paraoccipital processes (Owre 1967) of the exoccipital are broad and bilobed, with the scars for M. rectus capitus widely spaced, producing an irregularly shaped basioccipital with an unusual placement of the pneumatic foramina, compared with the pneumatic condition in *Morus* (pneumaticity lacking in *Sula*). Furcula: the medial surface of the clavicles is angled medially in anterior view and the furcular process is postero-dorsally directed (both characters convergent with *Sula sula*); the coracoidal processes are longer, and more slender and pointed than in *Morus* or *Sula*. Scapula: the dorsal surface of the furcular facet is thin, excavated, and concave. Coracoid: the coraco-humeral surface (Howard 1929) from the head to the bicipital pit is horizontal or flat, compared with the angled surface in *Morus* and *Sula*; the furcular facet in medial aspect is swollen and convex

with no ridge on the brachial tuberosity. Humerus: the shaft is laterally compressed, especially from mid-shaft to the brachial depression; the entepicondyle is long and narrow and projects distally to the level of the condyles. Ulna: the shaft is very long and slender and the dorsal surface of the carpal tubercle is pneumatic (non-pneumatic in *Morus* and *Sula*). Radius: the humeral cotyla is compressed into an oblong or elliptical shape. Femur: the distal end is very broad and flat. Tibiotarsus: the distal end of the fibula is swollen, producing an external bulge on the lateral surface of the external (lateral) condyle. Tarsometatarsus: the anterior face of the shaft is very deeply excavated and the inner trochlea lacks the distinct medial groove of other sulids.

Etymology. Greek *papas,* father, plus *sula,* the type genus of Sulidae. The name refers both to the patronym of the type species (abbot, from Hebrew, *abba,* father) and to the fact that this genus represents an ancient lineage in the family.

Material examined. Two skeletons of *Papasula abbotti* in the collection of the National Museum of Natural History, Smithsonian Institution (USNM 560682, USNM 560683). The first of these is a juvenile with the bones not quite fully ossified; the other is fully adult. Skeletons of all other species of Sulidae were also examined.

Remarks. The long, narrow wings of *Papasula abbotti* in life (Nelson 1971) are reflected in the osteology of the humerus and ulna as well. The pelvis is quite short and broad, being similar only to that of *Sula sula* within the Sulidae. It is not clear at this point, however, whether this is a convergent similarity or a shared primitive feature. The characters of the tibiotarsus and tarsometatarsus mentioned in the diagnosis are very distinctive and have proved quite useful in identifying archaeological material (D. W. Steadman). One feature of *Papasula abbotti* is absolutely unique and, if constant, would distinguish the species from all other birds. In the one adult skeleton, the sclera of both eyeballs, including the ring of sclerotic ossicles, is entirely ossified so as to form a hollow sphere with only a circular opening for the cornea and a smaller foramen for the optic nerve. Unfortunately, this element was not included with the juvenile specimen. We have not observed a similar condition in any other bird and we have no idea what it means.

Acknowledgements

We are extremely grateful to J. B. Nelson for salvaging and donating the 2 skeletons of *Papasula abbotti* that made our studies of its osteology possible. David W. Steadman shared his recent archaeological discoveries with us and commented on the manuscript. Our collaboration in Washington, DC was made possible by grants to K.I.W. from the Office of Fellowships and Grants, Smithsonian Institution, and the Alexander Wetmore Fund of the American Ornithologists' Union.

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Gynandromorphism in the Pink-browed Rosefinch *Carpodacus rhodochrous*

by Per Alström and Urban Olsson

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On 28 April 1983 in Dachigam Wildlife Sanctuary, Kashmir, when observing a flock of the sexually dimorphic Pink-browed Rosefinch *Carpodacus rhodochrous*, our attention was drawn to a single bird sitting in a bush near the flock. We had previously seen and identified it as a female or, possibly, second calendar-year male, and had watched it move about in the bush for a while. Yet, on turning to look at it again, the same bird showed adult male plumage.

It turned out that the bird was divided sagittally, being in female-type plumage on the right half of the body and adult male on the left. Although we had no opportunity to examine the bird in the hand, the line of division seemed well defined, and we could see no flaws in the plumage on either side. The bird disappeared after a few minutes and could not be relocated.

Gynandromorphism has been recorded in a number of passerine species and also in some non-passerines, including the Pheasant *Phasianus colchicus*, Flicker *Colaptes auratus* and Budgerigar *Melopsittacus undulatus* (Harrison 1985). According to Laybourne (1967) it is rare that the male plumage is on the left side of the body. Kumerloeve (1987) discusses the condition, citing all recorded cases known to him.

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A nest of the Sapphire-vented Puffleg *Eriocnemis luciani*

by Karl-L. Schuchmann

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During a general ornithological survey in mid-February 1977 on the western slope of Volcano Pichincha, Ecuador (00°10′S, 78°33′W), I discovered a nest of the Sapphire-vented Puffleg *Eriocnemis luciani*. To my knowledge, no reports exist on the nest of this hummingbird nor that of any other species of the genus. I provide here details of the nest, and also of the eggs and the micro-habitat where the nest was found. The nest and the eggs are now in the collection of the Zoological Research Institute and Museum Alexander Koenig, Bonn.

The Sapphire-vented Puffleg is a common species of bushy subparamo slopes up to open paramo, a habitat often found in the mountains around Quito (Ortiz-Crespo 1975). Its nest was discovered at an altitude of 3500 m, on a steep roadbank, on 16 February 1977. The slope was overgrown with shrubs and masses of grass. My attention was drawn to the nest site by the female appearing at the steep road side, loudly and jerkily calling "tick-tick" and swiftly disappearing underneath a bulk of dense thicket overhanging the slope. The nest was concealed by thick layers of grass. It was attached at one side to a thin twig, forming a more or less hanging construction. The nest consisted of a mass of moss, light greenish lichen and small pieces of fern leaves, held together by spider webs and soft parts of plumose pappus from a composite flower. The inner cup was not lined with fine plant material or animal hair typical of some other nests of high-altitude trochilids (e.g. see Carpenter 1976, Wiedenfeld 1985). Nests of similar lateral attachment, shape and nesting material are known from the closely allied genus *Haplophaedia* (Miller 1963, Schuchmann 1979).

The nest of *E. luciani* was roughly circular in shape and had the following dimensions:– inner diameter 3.8 cm, outer diameter 6.7 cm, depth of cup 2.9 cm, total depth 8.0 cm. It contained 2 fresh, elliptical, white eggs, measuring 16.0 × 9.7 mm and 15.7 × 10.0 mm respectively. These measurements are within the range given by Schoenwetter (1967, presumably from personal communication with A. Ruschi, since there is no trace of the latter having recorded any measurements). Only the female was seen at the nest.

The well-sheltered nest site underneath dense vegetation presumably accounts for the lack of lining material often found in exposed nests of Andean hummingbirds (e.g. Snow 1980, Wiedenfeld 1985). The thermal amelioration effect of such micro-habitats has been documented in detail by Calder (1973, 1974).

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I thank my wife Gertrud and Manfred Wittmann, my companions during many weeks of painstaking and often frustrating field work, for their steady support and encouragement. E. Kietzmann and L. Kiff read the manuscript critically.

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On the identity of *Phaethornis maranhaoensis* Grantsau, 1968 (Trochilidae)

by Christoph Hinkelmann

Received 7 April 1987

While undertaking a zoogeographical analysis of several *Phaethornis* species, I came upon evidence which led me to question the validity of *Phaethornis maranhaoensis* Grantsau, 1968, a species already regarded as doubtful by Mayr & Vuilleumier (1983). Grantsau's (1968) description of *Phaethornis maranhaoensis* is based on 9 specimens, all males, from Imperatriz and São Bento, Maranhão, Brazil. He compared these birds with the closely related, congeneric species *P. idaliae* and *P. nattereri*, both of which also occur in Brazil. Whereas *P. idaliae* is endemic to the endangered forests of SE Brazil and easily distinguished from *P. maranhaoensis* by differences in both size and coloration, *P. nattereri* occurs sympatrically with the new species. According to Grantsau (1968) the differences between *P. maranhaoensis* and *P. nattereri* are as follows:

(1) The throat is darker and the sides of the throat are more reddish in *P. maranhaoensis* than in *P. nattereri*.

(2) The upper tail-coverts of *P. maranhaoensis* are bronzy greenish with chestnut-reddish margins, whereas those of *P. nattereri* are uniformly chestnut-reddish.

(3) The tail in *P. maranhaoensis* is shorter and the distance between the tips of the central and outermost rectrices is smaller than in *P. nattereri*.

The differences in the shape of the tail and the coloration of the upper tail-coverts are illustrated by Grantsau (1968, Fig. [4]).

TABLE 1

Specimens of *Phaethornis nattereri* examined

AMNH: American Museum of Natural History, New York; MCZ: Museum of Comparative Zoology, Harvard University, Cambridge; FMNH: Field Museum of Natural History, Chicago; LSUMZ: Louisiana State University, Museum of Zoology, Baton Rouge; NHMW: Naturhistorisches Museum Wien; NMFS: Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt/Main.

Museum	No.	Sex	Collecting locality	Collector	Year
AMNH	127388	♀	Tapirapoan, Rio Sepotuba, Mato Grosso	G. K. Cherrie	1914
AMNH	34078	♂	Chapada, Mato Grosso (Type of *P. chapadensis* Allen, 1893)	H. H. Smith	1883
MCZ	198388	♀	Rondonopolis, Mato Grosso	J. Lima	1937
MCZ	198389	♀	Fazenda Maravilla, Cuiaba, Mato Grosso	J. Lima	1937
MCZ	198390	♂	Fazenda Maravilla, Cuiaba, Mato Grosso	J. Lima	1937
MCZ	198391	♀	Fazenda Maravilla, Cuiaba, Mato Grosso	J. Lima	1937
FMNH	63248	♀	Barra da Corda, Maranhão	H. Snethlage	1924
LSUMZ	71601	♂	Coroatá, Fazenda do Caximbo, Maranhão	E. Dente	1972
LSUMZ	71602	"♂"	Coroatá, Fazenda do Caximbo, Maranhão	E. Dente	1972
NHMW	18534	"♂"	Engenho da Gama, Mato Grosso	J. Natterer	1826
NHMW	42587	"♂"	Barra da Cocal, Rio Parnaiba, Piaui	O. Reiser	1903
NMFS	1208	♀	"Prov. Mato Grosso"	J. Natterer	1826

I was able to examine 12 specimens of *P. nattereri*, all of them from Brazil (see Table 1); Hellmayr (1929) described this species as "one of the rarest humming-birds in collections . . ." I could not examine skins of *P. maranhaoensis*.

Despite its large distribution range (see Fig. 1), populations of *Phaethornis nattereri* appear to be relatively uniform in coloration and size (Hellmayr 1929); differences appear only between adult males and females. Just as in the case of the 3 closely related species *P. longuemareus* (only specimens from Trinidad, E. Venezuela, and the Guyanas are considered in this study), *P. rupurumii* and *P. idaliae*, adult males have darker (i.e. more intensely coloured) throats and shorter tails with broader rectrices than do the females. These are precisely the differences which Grantsau (1968) suggests may be used to distinguish *P. maranhaoensis* from *P. nattereri*.

A comparison of the 12 specimens I examined with the original description of *Phaethornis nattereri* (Berlepsch 1887) reveals that the type specimen was a female. Two additional skins from the series of 6 birds collected by Natterer in 1826 (NHMW 18534, NMFS 1208) and examined by Berlepsch (1887) proved to be females as well. However, a male of *P. nattereri* collected by Dente in 1972 (LSUMZ 71601) appears to fit the description of *P. maranhaoensis* given by Grantsau (1968). Grantsau (1968), however, states that females of *P. maranhaoensis* are still unknown.

Figure 1. Collecting localities of *Phaethornis maranhaoensis* and *Phaethornis nattereri*. (Data taken from Hellmayr (1929), Pinto (1938), Ruschi (1955, 1967), Grantsau (1968), Müller (1973), and from museum specimens.)

TABLE 2

Measurements of *Phaethornis maranhaoensis* compared to those of *Phaethornis nattereri*. Figures indicate Mean ± Standard deviation biased (Number of specimens examined), (Range). Measurements in mm.

	P. maranhaoensis ♂♂	*P. nattereri* ♂♂	*P. nattereri* ♀♀
Bill length	24.0 ± — (9) (23–26)	24.5 ± 0.41 (3) (24–25)	24.3 ± 0.62 (9) (23–25)
Wing length	44.1 ± — (9) (43–46)	44.2 ± 0.24 (3) (44–45)	44.3 ± 0.94 (9) (43–46)
Tail length	41.1 ± — (9) (39–43)	40.8 ± 0.85 (3) (40–42)	46.5 ± 2.36 (6) (44–51)

Measurements were taken from Grantsau (1968) for 9 specimens of *P. maranhaoensis*, and from the 12 museum skins of *P. nattereri* indicated in Table 1.

There are no morphological differences between the birds from Mato Grosso, on which the description of *P. nattereri* (Berlepsch 1887) is based, and those from Maranhão: females from Maranhão (e.g. FMNH 63248) correspond to the description of *P. nattereri* (Berlepsch 1887), whereas males from Mato Grosso (e.g. MCZ 198390) agree with that of *P. maranhaoensis* (Grantsau 1968) (see Table 2).

To make matters more confusing, Grantsau (1968) described, as already stated, the upper tail-coverts in *P. nattereri* as uniformly chestnut-reddish in colour. *P. maranhaoensis,* in contrast, is said to have bronzy greenish feathers with chestnut-reddish margins. Examining the 12 skins of *P. nattereri,* I discovered this latter coloration in all specimens, but not a single bird had uniformly chestnut-reddish upper tail-coverts.

Thus, this feature proved unsuitable for distinguishing between the 2 species.

Phaethornis nattereri inhabits low-lying shrubby areas, thickets, gallery forests, and thin woodland with dense underbrush (Ruschi 1955). This type of vegetation occurs along the southern edge of the Amazonian forests. Müller (1973), based on information in Pinto (1938), suggests that *P. nattereri* might also occur in the campos islands along the lower Amazon River; these islands, completely surrounded by tropical rain forest, bear a vegetation very similar to that of the areas south of the Amazonian forests. Despite the relatively few localities (see Fig. 1) known to date, *P. nattereri* appears to be a widely distributed – although rare – species adapted to this shrubland vegetation. *P. maranhaoensis* was found at the northern margin of the range of *P. nattereri*. Grantsau (1968) describes the habitat of *P. maranhaoensis* as shrubland vegetation with numerous very dense patches of forest. Thus, the habitats of *P. maranhaoensis* and *P. nattereri* appear to be identical. Pinto (1978) considered *P. maranhaoensis* to be a subspecies of *P. squalidus*, hardly distinguishable from *P. squalidus amazonicus*. This latter form, however, is slightly larger than *P. nattereri* and *P. maranhaoensis*. Besides, these species have distinctly buffyer, less greyish underparts, and differ by broader, richer chestnut reddish feather margins in the upper tail-coverts, and less streaking on the throat than *P. squalidus (=rupurumii) amazonicus*. Ruschi (1986) also regarded *P. maranhaoensis* as a subspecies of *P. squalidus*.

Grantsau (1968) indicates that he has compared the new species with *P. nattereri,* but mentions neither the number nor the sex of the birds which he had examined. It seems likely that he was only able to use females for his comparison, especially since he considers 2 males of *P. nattereri,* collected by E. Snethlage in 1923 (Museu Nacional, Rio de Janeiro, No. 17987, 17988), to be conspecific with *P. maranhaoensis*.

Thus, I conclude that the description of *Phaethornis maranhaoensis* Grantsau 1968 is based on the previously undescribed male plumage of *Phaethornis nattereri* Berlepsch 1887; *P. maranhaoensis* should, therefore, be regarded as synonymous with *P. nattereri*.

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On the first Kenya record of the Shy Albatross *Diomedea cauta*

by G. R. Cunningham-van Someren

Received 8 April 1987

Through the kindness of Professor Mohd Haider of the Department of Zoology of the University of Nairobi, the National Museums of Kenya received a fine specimen of the Shy Albatross *Diomedea cauta*. The bird had been caught in fishing nets off Mombasa on 14 November 1986. It subsequently died and was deep frozen. It was heavily oiled and so discoloured as to be hardly recognizable; however Mr Kithele, technician at the Department of Ornithology, spent 2 days cleaning it up and restoring it to almost pristine condition. The specimen is a near adult female with skull not fully ossified.

Description

Bill colour faded to almost overall grey. Maxillary unguis black. Culminicorn with yellow tinge and latericorn yellow tinged, with a bright yellow lower margin. Ramicorn grey tinged pink, more so at the base and toward sulcus. Mandibular unguis black. Head: frons to crown white, a narrow dark mark over eye to base of naricorn. Nape, hindneck to dorsal surface and back to rump light grey to white. Upper tail-coverts white. Tail very dark grey. Chin, throat, breast and flanks white. Undertail-coverts white. Wing, upper surface, all coverts to greater coverts very dark grey almost black. Primaries and secondaries black with inner web white at base, but with wholly black tips. Underwing-coverts white. Secondaries undersurface white narrowly tipped grey-black, 2.0 cm wide, marginally tipped dark grey, 2.0 cm wide. Underwing appears white with a narrow dark leading and trailing edge, which is diagnostic

in comparison with the similar Black-browed Albatross *Diomedia melanophrys*. Tarsus to web and toes pink, claws white.

Size

Culmen 136 mm. Maxillary unguis 31 mm, depth 31 mm. Mandibular unguis 31 mm. Laticorn 110 mm with narrowest dorsal surface culminicorm to base ramicorn 28 mm. Wing 61 mm. Span 246 cm. Width at secondaries from leading to trailing edge at proximal end of radius/ulna 19 cm, up to 24 cm at carpo-metacarpal joint. Radius/ulna length 32.5 cm, carpo-metacarpus 31 cm, humerus 12.7 cm. Tarsus 93 mm, through to mid toe less claw, 132 mm. Web spread 132 mm. Tail (tips abraded) 22 cm. Caudal vertebrae + pygostyle 8 cm.

Weight 2.4 kg. Very emaciated. Crop and alimentary system virtually empty with only a few small fish bones and scales plus the remains of beaks of Cephalopods.

Discussion

This bird was carefully skinned and all major bones of wing and leg extracted and together with the body will be converted into osteological specimens.

The Kenya Meteorological Department reports on the weather around the time of capture as follows: "Mozambique channel, easterly to north easterly winds converging over Madagascar by 1200 UTC was a common phenomenon during the period. Around 14 November, there was a low pressure system over Madagascar and another east of Seychelles, however these systems were not deep enough to qualify to be called cyclones. By 24 November the low pressure system over Madagascar had filled and the quasi permanent anticyclone over south west Indian Ocean had intensified. Between 14 November and 24, there were persistent reports of thunder storms over Madagascar and Seychelles".

The weather conditions at sea may well have blown northwards to and around the coast of Kenya and Tanzania, for at the same period a sub-adult Sooty Tern *Sterna fuscata* was found 220 km inland at Tsavo in Kenya, while a newspaper reports the first record of the Lesser Cuckoo *Cuculus poliocephalus rochii* in Natal around the same time.

The only previous record of an albatross in Kenya waters is that of Bednall (1956, *Ibis* 98: 138), a sight record in June 1955 of a bird seen in Mombasa and identified as *D. melanophrys*. The acquisition now of a specimen of *D. cauta* casts doubt on the validity of the earlier record, for the species are uncommonly alike.

Readers' attention is drawn to the Bednall 1956 reference in 'Birds of Africa' (Brown *et al.* 1982: 482) entitled erroniously as "The sea birds off the southeast coast of Arabia" instead of "Black-browed Albatross at Mombasa".

The paucity of data on *D. cauta* in 'Birds of Africa' prompts this more detailed account of the Kenya specimen.

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An unnamed subspecies of *Euphonia rufiventris* from Venezuela and northern Brazil

by Robert W. Dickerman

Received 18 May 1987

The Rufous-bellied Euphonia *Euphonia rufiventris* ranges from the Sierra de Macarena in Colombia and the Rio Orinoco in Venezuela south to the Matto Grosso of Brazil and central Bolivia. Hellmayr (1936) briefly, and Zimmer (1943) in detail, described the colour differences between the northeastern (Venezuelan and northern Amazonian) populations and those of Peru. Zimmer felt, however, that variation throughout the species range was so great that it was doubtful that a division into subspecies was supportable. In re-examining the series in the American Museum of Natural History (AMNH), I found that by taking as standards for comparison 2 males from the Rio Orinoco and Cerro Duida area of Venezuela and 2 from the upper Rio Amazon of Peru, and 2 females from the Rio Negro of northern Brazil and 2 from Peru, I was able to place all but 2 of 71 adult males (97%), and all but 4 of 36 (90%) females to the northern and southern populations without recourse to label locality data.

Todd (1913) described the southern form as *Tanagra rufiventris colorata* (type locality Rio Surutu, Santa Cruz, Bolivia) but had only one pair from Venezuela for comparison, the male of which was an exceptionally pale individual. The source of Vieillot's type specimen of *rufiventris* was not known, and Todd assumed that it came from within the range of the northern race. Hellmayr (1919 – not 1920 as cited in Hellmayr 1936) designated Iquitos, Peru as the type locality for *rufiventris*. Todd, as indicated by his unpublished notes in the Carnegie Museum of Natural History, later realized his mistake, writing that he described *colorata* "under the supposition that the Venezuelan bird was typical – which is not now certain . . . the form from Caura Venezuela is the one that ought to have been named". The only other name in the synonymy of the species (Hellmayr 1936) is *Euphonia bicolor* Strickland 1850. Strickland's type specimen was from Peru, and *bicolor* is thus a synonym of the nominate race. The northeastern population may therefore be known as:

Euphonia rufiventris carnegiei subsp. nov.

Holotype. Adult male, No. 433922 in American Museum of Natural History, New York. Collected "Rio Orinoco, orilla derecho, Boca del Rio Ocamo" [on the right-hand side of the mouth of the Rio Ocamo], Territorio Amazonas, Venezuela, on 25 March 1929, by the Olalla brothers, Alphonse and Ramon.

Description. Similar to *E. r. rufiventris,* but adult males are darker brown ventrally (belly, flanks and undertail coverts) and darker blue dorsally; females are darker, more olive, less yellow-green, often with a weak metallic-blue gloss dorsally.

Range. Southern portions of Amazonas and Bolivar in Venezuela, and northern Brazil in the drainages of the Rios Uaupes and Negro. Probably occurs throughout tropical Amazonian lowlands north of the river.

Specimens examined. All the specimens examined by Zimmer are still available in the AMNH except for 1 male and 2 females from Chuchurras, Peru, and the 6 specimens from Bolivia that he borrowed from the Carnegie Museum.

The following 23 additional specimens in the AMNH collection (most of which were available to Zimmer, but were not listed in his paper), and 20 (Venezuela 2, Brazil 18) from the Carnegie Museum of Natural History (CM) were examined:– *Venezuela*: Cerro Duida region, 1 ♂; mouth of the Rio Ocamo, 1 ♀; Upper Caura River, 1 ♂, 1 ♀ (CM). *Colombia*: Mt. Macarena, 4 ♂♂. *Brazil*: Rio Tapajos, 2 ♂♂ (CM); Rio Solimoes, 6 ♂♂, 1 ♀ (CM); Rio Purus, 4 ♂♂, 5 ♀♀ (CM). *Ecuador*: Rio Napo, 1 ♂, 1 ♀; Concepcion (Cotapino), 2 ♂♂; Rio Suno above Avila, 3 ♂♂, 2 ♀♀; Rio Suno "abajo" (=below Avila), 1 ♂, 1 ♀; "Ecuador", 3 ♂♂. *Peru*: Luisiana, Rio Apurimac, 1 ♂; Chanchamayo (Junin), 1 ♂, 1 ♀.

Remarks. Specimens used for colour comparisons were of comparable museum age. Males vary somewhat more in dorsal coloration than they do ventrally. Two males from the Sierra de Macarena of Colombia, a locality intermediate between the northern and southern populations, are dark, while 2 are paler, as could be expected from a truly intermediate population, though no prediction was contemplated before the comparisons themselves were made. Only 2 adult males from along the Rio Negro of the 43 available from north of the Rio Amazon could not be assigned to subspecies other than on the basis of locality. All males from Ecuador, Peru and Brazil south of the Amazon were readily separable from *carnegiei*. Zimmer (1943) wrote that males of the northern population had a very limited area of bright yellow on the sides of the breast; however, I believe this was due to the make up of the specimens. I see no difference in the depth of the yellow between the 2 subspecies.

The single male from Venezuela in the Carnegie Museum collection is pale brown ventrally, and is separable from only half of the 12 males from Brazil by that character; however it is darker blue dorsally than any of them.

Females vary more in coloration than do males. Four of 19 (17%) from Venezuela and the Rio Negro are as yellow-green dorsally as are females from Brazil and Peru. All females from Peru, Ecuador and Brazil south of the Amazon are paler than *carnegiei*. Two immature males from Peru are darker, colder olive-green dorsally, and thus resemble females of *carnegiei* more closely in that character. No males from the northern subspecies in similar plumage were seen.

I name this subspecies for the Carnegie Museum of Natural History, Pittsburgh, whose rich holdings of South American birds formed the basis for so much of the work of the late W. E. C. Todd.

Acknowledgements

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A revaluation of the systematic status of the Italian Grey Partridge *Perdix perdix italica* Hartert

by Carlo G. Violani, Alessandra Fedrigo and Renato Massa

Received 21 May 1987

Hartert (1917) named a new subspecies of the Grey Partridge as *Perdix perdix italica,* based on material originating from central Italy, and fixed as type a male obtained by Squilloni at Badia di Passignano, Chianti, 20 January 1905. This specimen (in fact a young male), and 13 paratypes from the Rothschild collection, are now preserved at the American Museum of Natural History, New York.

The new race was described as different "at a glance from the Central European *Perdix perdix perdix*" and so closely similar to "the Pyrenean *P. p. hispaniensis* (=*charrela*) that at first they seemed to be practically indistinguishable". However, Hartert also added that a more careful comparison showed that the Italian birds differed from *P. p. hispaniensis* thus: "the upperside less dark and distinctly more brownish; jugulum and chest not so dark grey . . . the male differs from *P. p. perdix* chiefly by the less rusty or rufous upperside, especially dark brown instead of rufous crossbars on the rump and much darker, less reddish brown spots on the upper wing coverts. The females, because of their coarser markings with the wider light shaft lines and spots, look rather different from females of *P. p. perdix*" (Hartert 1917).

According to Lovari (1975), and hence King (1978–1979), *P. p. italica* is a subspecies in danger of extinction in most of its former range (i.e. the greater part of the Italian peninsula). Its reduction in distribution and abundance in Italy was caused, according to Lovari (1975), by "hunting, changes in agricultural practice, competition from introduced Grey Partridges of other subspecies". There are, in fact, historical records of Grey Partridges being imported to northern Italy since Napoleonic times (Borsa 1924), and by 1939 at least, Scheibler (1939-1940) was suggesting the introduction of Bohemian and Hungarian Partridges in order to implement the stock of local birds in Italy.

While there is no doubt that the original populations of Italian Partridges have been greatly altered by the above factors of disturbance (Brichetti 1985, Matteucci & Toso 1985, Potts 1985, 1986, Beani 1987),

there are some doubts as to the validity of the *italica* race, which has been questioned by several subsequent authors, among them Vaurie (1965), who regarded it as "poorly differentiated from the race *hispaniensis*", and Ghigi (1958), who considered it of "doubtful systematic value" as well as all the other "local races" of *Perdix perdix*. We have therefore checked to see whether museum specimens collected in Italy no later than 1920 could support the recognition of *italica* as a distinguishable subspecies.

Specimens examined

We examined 49 adult birds labelled as *Perdix perdix italica* (skins and mounted specimens), 2 of them from the British Museum (Natural History) (BMNH), 19 from the American Museum of Natural History (AMNH), 16 from "La Specola" Museo di Zoologia dell'Universita' di Firenze (MZUF), 12 from the Museo Civico di Zoologia, Roma (MCZR), 34 of the total being ♂♂, 15 ♀♀.

We did not examine immatures and birds collected after 1920 (3 years after Hartert's original description) in order to avoid possible specimens of restocked birds or their hybrids from abroad.

We also examined other subspecies in museum material:— *P. p. perdix* (114 birds, 71 from BMNH, 12 from AMNH and 31 from the Natural History Museum of Vienna (NHMW) – 63 of which were ♂♂, 51 ♀♀); *P. p. hispaniensis* (18 birds, 9 from BMNH, 7 from AMNH, 2 from NHMW, 8 ♂♂, 10 ♀♀); *P. p. lucida* (50 birds, 21 from BMNH, 27 from AMNH, 2 from NHMW, 35 ♂♂, 15 ♀♀); *P. p. armoricana* (13 birds, 9 from BMNH, 2 from ANMH, 2 from MCZR); *P. p. sphagnetorum* (23 birds, 5 from BMNH, 4 from AMNH, 14 from the Rijksmuseum van Natuurlijke Historie (RMNH) Leiden); *P. p. robusta* (4 birds, 2 from BMNH, 2 from NHMW, 3 ♂♂, 1 ♀).

Methods

We measured exposed culmen, pressed wing, tarsus and tail lengths of all 291 specimens. We also evaluated colour intensity of crown, breast, back and rump, and compared the breast-barring texture of 163 specimens (92 ♂♂, 71 ♀♀). For the evaluation of colour intensity, we established an arbitrary scale, based on selected specimens in BMNH.

The grey intensity of crown, breast, back and rump was scored from 1 to 6 from the lightest to the darkest; a similar score was also adopted for the breast-barring texture, ranging from 1 (very fine) to 5 (very coarse) (see Table 1).

Results

Table 2 shows the measurements of male and female *italica* compared with the nominate *perdix* and other races.

Significant differences from the nominate were found in males for the exposed culmen ($p<0.01$), tarsus ($p<0.005$) and tail ($p<0.01$) and in females for the wing ($p<0.005$) and tarsus ($p<0.05$; Student's "t" test) (Table 3). However, males' culmen and both sexes' tarsus were slightly longer and not shorter than those of nominate *perdix* as reported by Lovari (1975). A smaller value with respect to *perdix* was only found in the case of wing length for both sexes.

TABLE 1

Colour scores of reference specimens of *Perdix perdix* (see text).

		Crown	*Breast*	*Back*	*Rump*	*Barring texture*
BMNH 1965 M–2133	*P. p. hispaniensis* ♂	5	5	5	5	5
BMNH 1939–12–9–3715	*P. p. hispaniensis* ♀	5	5	5	4	5
BMNH 1949–W–6450	*P. p. armoricana* ♂	3	3	4	4	3
BMNH 1949–W–6452	*P. p. armoricana* ♀	3	4	4	5	5
BMNH 1938–2–5–2	*P. p. sphagnetorum* ♂	4	3	4	5	3
BMNH 1949–W–6441	*P. p. sphagnetorum* ♀	5	4	5	5	3
BMNH no number	*P. p. perdix* ♂	3	2	3	3	3
BMNH no number	*P. p. perdix* ♀	4	2	3	3	3
BMNH 92–12–24–5	*P. p. lucida* ♂	1	1	2	1	2
BMNH 1965–M–2151	*P. p. lucida* ♀	3	3	2	1	2
BMNH 1965–M–2125	*P. p. robusta* ♂	1	1	1	1	2
BMNH 1965–M–2124	*P. p. robusta* ♀	3	2	1	2	3
MZUF M4637 C1050	*P. p. italica* ♂	2	3	3	4	4
AMNH 541842 (Paratype)	*P. p. italica* ♀	2	2	3	2	4

TABLE 2

Biometric measurements of male and female specimens of Grey Partridge *Perdix perdix* subspecies (mm); N = number of specimens examined.

MALES	*Wing*	N	*Tail*	N	*Culmen*	N	*Tarsus*	N
Perdix	154.9±0.663	62	82.4±0.481	62	15.1±0.103	63	41.0±0.335	63
italica	153.0±0.685	34	80.1±0.750	33	15.6±0.185	33	42.1±0.526	34
lucida	160.6±0.805	35	82.8±0.434	35	15.3±0.114	35	40.3±0.379	35
hispaniensis	152.5±1.512	8	82.6±1.362	8	15.2±0.247	8	39.5±0.495	8
armoricana	154.7±1.145	8	82.0±0.823	8	14.8±0.121	8	40.0±0.802	8
sphagnetorum	154.4±0.994	11	83.0±0.588	11	14.3±0.244	10	41.2±0.672	11
robusta	161.0±0.577	3	85.5±2.333	3	15.5±0.500	2	40.0±1.155	3
FEMALES								
Perdix	153.5±0.558	51	81.3±0.655	51	15.1±0.131	50	40.6±0.268	51
italica	149.3±1.258	15	79.5±1.112	15	15.3±0.164	50	42.2±0.907	51
lucida	156.7±1.422	15	81.3±0.643	15	15.7±0.124	15	40.3±0.772	15
hispaniensis	147.6±3.344	10	84.1±2.368	10	14.8±0.367	10	39.6±0.367	10
armoricana	150.0±2.258	5	81.4±1.208	5	15.2±0.211	5	42.6±1.122	5
sphagnetorum	150.9±0.633	12	80.1±0.543	12	14.9±0.243	12	39.0±0.408	12
robusta	—	1	—	1	—	1	—	1

Table 3(a,b) shows also significant differences in body measurements between either *P. p. perdix* (a) or *P. p. italica* (b) and 5 different subspecies (*italica, lucida, hispaniensis, armoricana, sphagnetorum*). There is little mensural difference between *italica* and *hispaniensis* (only tarsus length), but no difference at all between *hispaniensis* and *perdix*.

The tarsus and culmen measurements of the male holotype of *P. p. italica* (AMNH 541843 – tarsus 40 mm, culmen 15.0 mm) were smaller and not even comparable with the mean values (95% confidence interval) of all the specimens of *italica* measured by us (Table 4). The holotype's culmen was included in the 95% confidence interval of the mean value of *P. p. perdix,* but the wing (155 mm) and the tail (84 mm) of the holotype

TABLE 3

Significance of comparison of measurements and colour intensities between *P.p. perdix* and *P.p. italica* and other subspecies. * = p < 0.05; ** = p < 0.01; *** = p < 0.001; ns = not significant. (a) *P.p. perdix vs* others; (b) *P.p. italica vs* others.

(a) **P. p. perdix**	*Biometry*				*Colour*				
MALES	wing	tail	culmen	tarsus	crown	breast	back	rump	b. texture
italica	ns	**	**	**	ns	ns	ns	**	**
lucida	***	ns	ns	ns	ns	**	ns	**	ns
hispaniensis	ns	ns	ns	ns	***	***	***	***	***
armoricana	ns	ns	ns	ns	*	ns	*	*	ns
sphagnetorum	ns	ns	**	ns	***	***	***	***	***
FEMALES									
italica	**	ns	ns	*	ns	ns	ns	ns	***
lucida	*	ns	*	ns	ns	ns	*	ns	ns
hispaniensis	**	ns	ns	ns	***	***	***	***	***
armoricana	ns	ns	ns	*	ns	***	**	***	***
sphagnetorum	*	ns	ns	**	***	***	***	***	ns

(a) **P. p. italica**	*Biometry*				*Colour*				
MALES	wing	tail	culmen	tarsus	crown	breast	back	rump	b. texture
perdix	ns	**	**	**	ns	ns	ns	**	**
lucida	***	**	ns	***	ns	**	ns	ns	**
hispaniensis	ns	ns	ns	**	***	***	***	***	***
armoricana	ns	ns	*	*	***	ns	**	*	ns
sphagnetorum	ns	*	**	ns	***	***	***	***	***
FEMALES									
perdix	**	ns	ns	*	ns	ns	ns	ns	***
lucida	***	ns	ns	ns	ns	ns	ns	ns	*
hispaniensis	ns	ns	ns	*	**	**	**	***	***
armoricana	ns	ns	ns	ns	ns	ns	*	***	ns
sphagnetorum	ns	ns	ns	**	***	***	***	***	***

TABLE 4

Mean and limits (upper and lower) of 95% confidence interval for biometric parameters (mm) in *P. p. italica* and in *P. p. perdix*. Holotype measurements in the first column.

	Holotype *P. p. italica*	*P. p. italica* Mean	*P. p. italica* Limits	*P. p. perdix* Mean	*P. p. perdix* Limits
Wing	155	153.0	151.6 / 154.4	154.9	153.6 / 155.2
Tail	84	80.1	78.6 / 81.6	82.4	81.4 / 83.4
Culmen	15	15.6	15.2 / 16.0	15.1	14.9 / 15.3
Tarsus	40	42.9	41.9 / 43.9	41.0	40.3 / 41.7

were larger than the mean values of *italica* and not included in the 95% confidence intervals. On the other hand, the wing was fully comparable (included in the 95% confidence interval) to that of *P. p. perdix*.

Colour intensities of *italica* and nominate *perdix* are shown in Table 5. No significant difference (Table 3) was found in the colour intensity between *italica* and *perdix* except in the case of the male rump, which was slightly lighter (and not darker) in *italica* ($p<0.01$). In both sexes the breast-barring texture was coarser in *italica* than in *perdix* ($p<0.01$; Student's "t" test).

When colour intensities of *italica* and *perdix* are compared with those of *hispaniensis, armoricana* and *sphagnetorum* (Table 3), it appears that the 3 latter are the most distinctive forms, being much darker ($p<0.0005$; Student's "t" test, for both sexes and almost all scores) than both *italica* and *perdix,* though Table 5 cannot show the tone of the colour, i.e. dark rufous for *armoricana* and dark grey for *hispaniensis* and *sphagnetorum*.

TABLE 5

Colour scores of specimens of Grey Partridge *Perdix perdix* belonging to different subspecies (see text).

♂♂	*Crown*	*Breast*	*Back*	*Rump*	*Barring tex.*	N
perdix	2.15±0.1401	2.96±0.0911	2.97±0.0936	2.85±0.1009	2.51±0.1596	39
italica	1.89±0.0762	2.67±0.1617	2.89±0.0762	2.11±0.2542	3.28±0.1354	18
lucida	1.92±0.1486	2.50±0.2303	2.42±0.1486	2.25±0.2176	2.67±0.2247	12
hispaniensis	5.00±0.0000	5.00±0.0000	5.00±0.0000	5.00±0.0000	5.00±0.0000	6
armoricana	3.00±0.2582	3.33±0.2108	3.17±0.4014	3.67±0.2108	2.83±0.1667	6
sphagnetorum	5.40±0.3055	5.40±0.3555	5.40±0.2211	5.30±0.3000	1.50±0.3073	10
♀♀						
perdix	2.78±0.1781	2.75±0.1100	2.81±0.1139	3.09±0.1132	2.75±0.1188	32
italica	2.83±0.3658	2.33±0.2562	3.27±0.2727	2.58±0.3362	2.33±0.2562	12
lucida	2.89±0.3889	2.78±0.2222	2.56±0.1757	2.44±0.2422	3.11±0.3514	9
hispaniensis	5.00±0.0000	4.67±0.3333	4.67±0.3333	4.67±0.3333	5.00±0.0000	3
armoricana	3.20±0.4899	4.20±0.2000	4.20±0.3742	4.20±0.3742	3.80±0.5831	5
sphagnetorum	5.11±0.1111	4.11±0.2606	5.11±0.1111	5.11±0.1111	2.56±0.1757	9

These comparisons show that *italica* is in fact much more similar to *perdix* and *lucida* than it is to *hispaniensis* as originally asserted by Hartert (1917).

Concerning the biometric measurements shown in Table 2 and their statistical significance in Table 3, it appears that in males there are no significant differences except in the case of *perdix vs hispaniensis* and *perdix vs armoricana,* and in females except in the case of *italica vs armoricana*.

Discussion

The main finding of this investigation, as far as biometrics are concerned, is that the holotype on which Hartert based his description of *P. p. italica* is in fact very similar to *P. p. perdix*.

Moreover, the colours, when scored on a semi-quantitative basis, appeared only slightly different when *perdix* and *italica* are compared, but very different when both subspecies are compared to *hispaniensis, armoricana* and *sphagnetorum,* all of which are definitely darker.

Therefore, apart from any evaluation of the systematic value on purely morphological criteria, it appears that the original description of *P. p. italica* is not based on objective, constant differences either in biometry or in colour. For these reasons we propose to put this subspecies in synonymy with *P. p. perdix*.

Acknowledgements

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APPENDIX

Localities and year of collecting (up to 1920) of examined specimens of *Perdix p. italica*.

Piedmont: (province of Torino) Piossasco 1882; (prov. Alessandria) Voltaggio 1889. *Veneto*: (prov. Verona) Villafranca 1899 & 1900, Costa San Massimo 1908, Pescantina 1906; (prov. Vicenza) near Bassano 1897; (prov. Padova) near Padova 1884, Colli Euganei 1878 & 1897. *Friuli*: (prov. Udine) Udine 1899. *Emilia Romagna*: (prov. Reggio Emilia) Reggio Emilia 1920. *Tuscany*: (prov. Firenze) Firenze 1881 & 1897, Castelfalfi 1877, Fiesole 1875, Mugello 1905, Vicchio di Mugello 1903, Barberino di Mugello 1881, Empoli 1878, M. Calvana Prato 1877, Prato 1884, Collegalli 1863 & 1864, Greve 1900, Badia di Passignano in Chianti 1905 [**type locality**]; (prov. Pisa) Laiatico 1881, Saline di Volterra 1878, S. Donnino Volterra 1882, Pontedera 1877, Spedaletto 1868 & 1870, Pallaia S. Miniato 1877; (prov. Arezzo) Fabbriche 1904, Lucignano 1876, Gargonza 1910, Montevarchi 1893; (prov. Grosseto) Grosseto 1883, Maremma 1879; (prov. Siena) Radda in Chianti 1876, Amiata 1903, Meleto 1880, 1883 & 1908. *Umbria*: (prov. Perugia) Foligno 1880; (prov. Terni) Terni 1881, Orvieto 1896. *Latium*: (prov. Roma) Roma 1902, Tor Paterno' 1901. *Campania*: (prov. Napoli) Napoli pre-1904.

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Nest and eggs of the Angola Lark *Mirafra angolensis*

by J. F. R. Colebrook-Robjent

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According to Mackworth-Praed & Grant (1962) the nest and eggs of the Angola Lark *Mirafra angolensis* are "apparently undescribed". On 17 October 1986 I flushed a tight-sitting lark from its nest containing 3 eggs.

The lark perched in full view on a nearby mound: it appeared stumpy with a short tail and dark back. It was collected and proved to be a ♀ Angola Lark with wing 77 mm and weighing more than 32.5 g.

The nest was on a gentle slope several hundred metres from the Chitunta River, on the plain of that name, Mwinilunga District, North Western Province, Zambia, (11°29′S, 24°22′E), 1390 m, a.s.l. The nest was placed on the slight slope of a small mound in black dambo (= shallow valley) soil, amongst scattered knee-high termite mounds shaped like Prussian helmets. The plain was covered in rather sparse and short fresh green grass (having sometime previously been burnt over) with patches of low-lying and fruiting 'Lollo' berry. The nest was slightly domed, the roof being of fresh and dry stems, the cup sunk into the ground under a small tuft of fresh and dry blades, all under the fleshy leaves of a 'Lollo' berry plant. The cup was built of coarse, dry grasses, with 'chopped' grass rootlets on the rim, thinly lined with very fine fresh grasses. The rim was c. 20 mm thick, the cup 65 mm in diameter and 42 mm deep.

The eggs are regular, rather glossy ovals, with a creamy ground, liberally and densely spotted medium-brown mostly obscuring ashy-grey shell markings, forming an ill-defined zone on the broad end. The eggs measure: 21.0 × 15.0, 20.7 × 14.8 and 20.5 × 14.7 mm. They contained medium-sized, but varied, embryos and totalled 7.1 g in weight.

Benson *et al.* (1971) suggest that *M. angolensis* is related to the Clapper Lark *M. apiata,* but Hall & Moreau (1970) place the former in the Rufous-naped Lark *M. africana* superspecies. *M. africana* and *M. rufocinnomomea* also occur in Mwinilunga, a nest of the latter species containing 3 eggs soon to hatch having been found the previous day on another plain. Previously my experience with breeding *Mirafra* larks was limited to the above latter 2 species, all in Choma, Southern Province. From that locality, 23 nests of *M. africana* have been found (1969–1986), the average size of 56 eggs being 22.1 × 15.8 mm; 19 fresh eggs averaged 2.9 g. During the same period, 13 nests of Flappet Lark *M. rufocinnamomea* were discovered, 20 eggs averaging 20.6 × 14.8 mm, the average weight of 6 being 2.26 g.

The clutch of *M. angolensis* is intermediate in appearance between the typically paler and larger eggs of *M. africana* (which often show extensive grey undermarkings) and the generally narrower and warmer brown spotting of *M. rufocinnamomea* eggs. But this is as far as one may comment until a representative series of *M. angolensis* becomes available for comparison.

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Nearctic migrants in southwest Peru

by R. A. Hughes

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Compared with the numerous papers on Palaearctic migrants in different parts of Africa, relatively little has been published on Nearctic migrants in South America. Many local and regional lists, from which the presence or absence of migrants may be extracted, are scattered through the literature, and there have been papers dealing with specific groups of migrants; but there have been few general surveys of migration as a whole in any one country or section thereof.

The present paper brings together all known information on the status of Nearctic-breeding migrants in southwest Peru, accumulated over a period of 33 years starting in 1953.

For this purpose, southwest Peru is considered to include the whole of the departments of Arequipa, Moquegua and Tacna, together with the southern two-thirds of the department of Puno, comprising overall an area of some 80,000 km^2 lying between 14° and 18°S and between 69° and 75°W. The northern third of Puno is excluded, since it lies on the Amazonian slope of the Andes and belongs, biotically, to humid south-eastern Peru, so very different from the predominantly high and arid southwest.

Physical features

Southwest Peru is very mountainous and much of it lies at a great elevation above sea level. There is virtually no coastal plain bordering the Pacific, where the land rises steeply to the Coast Range at over 800 m within a few miles of the shore. The Coast Range is dwarfed by the Western Cordillera of the Andes, from which it is separated by a longitudinal depression of extremely arid plains, locally known as *pampas,* some 30–50 km in width. The Western Andes are characterized by extensive tablelands at 4000–4600 m, broken by higher ridges and punctuated by a succession of volcanoes, of which Coropuna (6615 m) is the highest.

Towards the northeast, the West Andean tablelands slope fairly gently into the Titicaca Basin or *Altiplano,* which consists of vast level plains at a mean altitude of 3810–4000 m, locally interrupted by ridges of low hills which seldom rise to more than a few hundred metres above the mean level of the surrounding plains. Still farther to the northeast beyond the plains of the *Altiplano* the land rises again, now to the spectacular snow-peaks of the Cordilleras de Carabaya and Real, which together form part of the East Andean system, marking a major climatic divide in southern Peru, separating the arid west from the extremely humid region to the east, which lies beyond the scope of this paper.

Towards the northwest, the *Altiplano* is enclosed by a series of transverse ridges, such as the Cordillera de Chila and others, which mark the watershed between the Titicaca Basin and the inter-Andean region of south-central Peru which is drained by the headstreams of rivers belonging to the Amazonian system.

Climate

Most of southwest Peru experiences a southern summer rainfall régime, with 80% of the annual total concentrated between December and March inclusive. Broadly speaking, the isohyets run parallel to the Pacific Coast, declining steadily from 600–800 mm on the *Altiplano* to less than 5 mm in the superdesert *pampas* behind the Coast Range. There is a small increase along the Coast Range and the Pacific Coast where, unlike the interior, most of the scanty rainfall occurs in the austral winter and spring (July to October), in the form of drizzle accompanying the sea-fogs which are typical of that time of year.

Temperatures depend largely on altitude and, away from the coast, are characterized by small annual ranges in combination with wide diurnal oscillations, which are especially noteworthy during the dry austral winter. Frost occurs at times as low as 2000 m and is regular at night in the winter above 3500 m, but day-long freezes are only exceptionally experienced even at 4500 m. The snowline on the Western Andes runs at the remarkably high level of 6000 m, these summits curiously carrying more snow in summer than in winter.

Along the Pacific Coast the cold upwelling waters of the Peru (Humboldt) Current exert a powerful influence, and temperatures are low for the latitude, averaging only 18.9°C at Mollendo (17°S), fully 6°C below the theoretical mean for the latitude. At long intervals the coastal region is affected by the warm waters of *El Niño,* the effects of which can be dramatic (Hughes 1985).

Habitats

Southwest Peru may be divided into 3 regions, each with its distinctive habitats.

THE PACIFIC COASTAL REGION

(a) *Pacific Ocean.* Dominated by the upwellings of the Peru Current, the coldest waters lie immediately adjacent to the coastline, where their average surface temperatures are close to 15°C (annual range 13°–19°C). 20–25 km offshore the sea temperature rises gradually with increasing distance from land.

(b) *Pacific Seaboard.* Heavily surf-beaten, sandy beaches and rocky stretches alternate, and occasional small islets occur.

(c) *Loma.* This formation of highly specialized fog-sustained vegetation of the Coast Range consists basically of a variety of herbaceous annuals, with woody thickets and occasionally even small trees. Most plants are active between August and November. Towards the interior the *loma* becomes increasingly depauperate and xeric, with associations of cacti and terrestrial bromeliads replacing the diversified annuals of the seaward-facing escarpments. Below 300 m the *loma* is very sparse and most of the narrow foothill zone between the Coast Range and the sea is desert, with a thin covering of low plants only during particularly damp seasons.

(d) *Superdesert.* Extreme desert conditions prevail over the *pampas* between the Coast Range and the West Andean foothills. These wastes

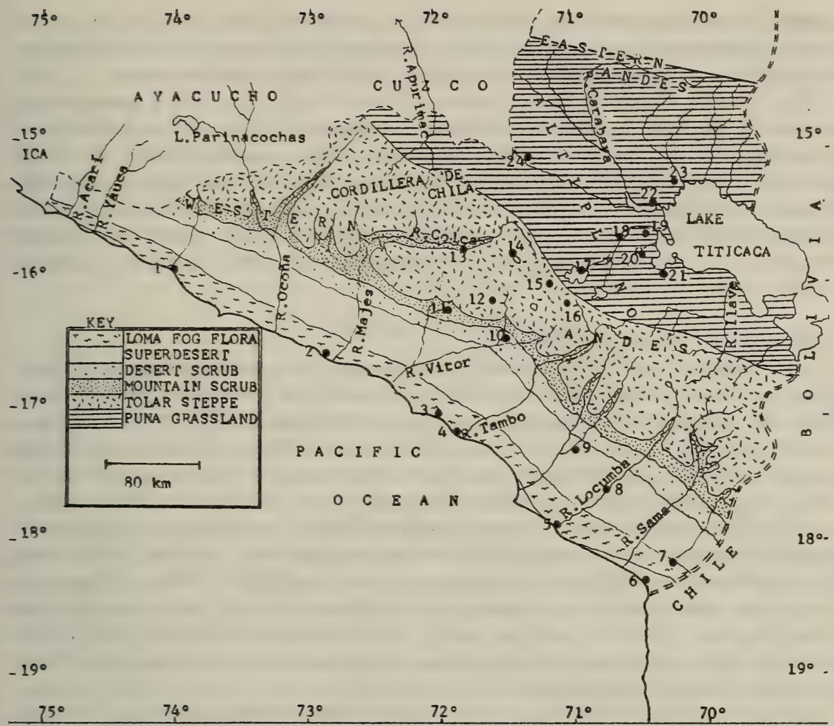

Figure 1. Sketchmap of southwest Peru to show habitat zones and localities with their departments and altitudes (m).

1.	Chala (Arequipa)	Sea-level	15.	Crucero Alto (Arequipa)	4470 m
2.	Pucchun (Arequipa)	5 m	16.	Toroya (Arequipa)	4700 m
3.	Mollendo (Arequipa)	0–100 m	17.	Lake Lagunillas (Puno)	4160 m
4.	Mejia (Arequipa)	0–5 m	18.	Cabanillas (Puno)	3850 m
5.	Ite (Tacna)	Sea-level	19.	Juliaca (Puno)	3820 m
6.	La Yarada (Tacna)	Sea-level	20.	Lake Umayo (Puno)	3820 m
7.	Tacna (Tacna)	570 m	21.	Puno (Puno)	3810–3900 m
8.	Locumba (Tacna)	600 m	22.	Lake Arapa (Puno)	3810 m
9.	Moquegua (Moquegua)	1400 m	23.	Taraco (Puno)	3810 m
10.	Arequipa (Arequipa)	2300–2600 m	24.	Chuquibambilla (Puno)	3950 m
11.	Huanca (Arequipa)	3000 m			
12.	Sumbay (Arequipa)	4100 m			
13.	Chivay (Arequipa)	3500 m			
14.	Laguna del Indio (Arequipa)	4400 m			

are utterly devoid of vegetation, but in some areas irrigation schemes have reclaimed parts of this driest of all the world's deserts.

(e) *Coastal valleys and irrigations.* A number of rivers descend to the Pacific Coast and, in marked contrast to the aridity of their surroundings, their valleys are very fertile and have been cultivated since the pre-Columbian period. In some areas irrigation projects have extended the

agricultural lands well beyond the natural confines of the valleys. Rice and sugar-cane are the principal crops in the larger valleys, with fruits, maize, vegetables, etc mostly at a subsistence level, in the smaller ones.

(f) *Coastal wetlands*. Near the mouths of the Majes and Tambo rivers there are shallow lagoons and pools surrounded by reed- and rushbeds grading into thickets of tall shrubs or saline grasslands on the drier ground. Insignificant patches of such habitat are also found near the mouths of some of the smaller rivers. Although of small extent, these coastal wetlands are of great significance to birdlife, native as well as migratory, since such habitat is so exceptional along the west coast of South America between 3° and 30°S.

THE WEST ANDEAN REGION

(a) *Desert Scrub*. The lowest foothills are as naked as the superdesert *pampas* from which they rise, but with increasing altitude and distance from the sea a poor xerophytic vegetation, termed Desert Scrub (Pearson 1978), develops, mainly between 1800 and 2800 m. Diverse cacti and dwarf deciduous shrubs are dominant, the latter in leaf only during the brief midsummer rains, together fleetingly with various small annuals.

(b) *Mountain Scrub*. Towards higher levels, with heavier and more regular rainfall, a considerably richer vegetation, termed Mountain Scrub (Pearson 1978) appears, in most parts at 2800–3900 m. Mountain Scrub is much taller and denser than Desert Scrub and cacti far less conspicuous, diverse bushes being the dominant element. At 3500–3800 m, where the vegetation attains its climax, there are localized relict woodlands of *Polylepis* trees.

(c) *Tolar*. Above 3900 m on the summit slopes, and thence inland over the tablelands behind the volcanic peaks, scrub is replaced by *Tolar*, an arid steppe formation dominated by the 'hard' bunch-grass *Festuca orthophylla* and extensive stands of *tola* bushes, *Lepidophyllum* spp.

(d) *West Andean valleys*. The upper reaches of the river valleys which descend to the Pacific Coast are mostly deeply entrenched within the mountains, sometimes constricted into impressively deep canyons. Agriculture is practised wherever possible in cultivated terraces, many having been worked since pre-Columbian times, those along the Colca valley in Arequipa department being particularly extensive. Temperate zone crops are raised, such as maize and other cereals, onions, beans, etc.

(e) *West Andean wetlands*. Wetlands are virtually non-existent on the steep and arid West Andean slopes, but on the tablelands there are spring-fed boggy tracts known as *bofedales* as well as scattered lakes, some of permanent fresh water, others seasonal and hypersaline.

THE ALTIPLANO REGION

(a) *Puna grassland*. This covers a vast area, from the eastern rim of the West Andean tablelands across the whole of the *Altiplano* to the crest of the Eastern Andes. The dominant element is the 'soft' bunch-grass *Stipa ichu*; other smaller grasses flourish between the tufts and numerous low-growing annuals flower from January to May, in and after the rains. Woody vegetation is largely lacking, but in scattered localities there are open *Polylepis* woodlands.

(b) *Altiplano agricultural lands*. The raising of sheep, cattle and llamas is the main occupation, but some cold temperature crops are grown, mainly potatoes, but also some cereals and indigenous crops such as quinoa and oca.

(c) *Altiplano wetlands*. Apart from the 8000 km^2 of Lake Titicaca, there are many fresh or slightly brackish lakes, some of considerable size. Most have extensive shoreline belts of emergent and floating vegetation, often backed by boggy tracts subject to inundation during the summer rains. The many rivers are relatively slow-flowing and liable to flood in the rainy season. There are also spring-fed *bofedales*.

The Nearctic Migrants

Fifty-eight species of Nearctic migrants have been recorded from southwest Peru since 1953 (see Appendix), 46 of them regularly in varying degrees of abundance, while 12 are vagrants. The status of all 58 species by families is given in Table 1.

Nearctic migrants occur from the ocean beaches and Pacific coastal waters to above 4600 m in the Andes, but much of the territory is overflown and the birds are present in abundance only along the Pacific Coast and in wetland habitats, Andean as well as coastal. Far fewer species occur in agricultural areas, while scrub, steppe and grassland habitats are largely unvisited. The superdesert *pampas* near the coast are, of course, inimical to all forms of birdlife.

The Nearctic waders meet with virtually no competition from native species, there being no native Scolopacidae in the coastal region and only the Andean Snipe *Gallinago andina* in the mountains in small numbers. *G. stricklandii* and *G. imperialis* apparently do not occur. The 2 migratory *Pluvialis* plovers have no native counterparts, but *P. dominica* may

TABLE 1

Status of Nearctic migrants and vagrants by families in southwest Peru

	Regular migrants	Vagrants	Total
Anatidae	1	—	1
Accipitridae	—	1	1
Pandionidae	1	—	1
Falconidae	1	—	1
Charadriidae	3	—	3
Scolopacidae	18	5	23
Phalaropodidae	3	—	3
Stercorariidae	2	—	2
Laridae	10	1	11
Rynchopidae	1	—	1
Cuculidae	—	1	1
Apodidae	1	—	1
Tyrannidae	—	2	2
Hirundinidae	3	—	3
Turdidae	1	—	1
Vireonidae	—	1	1
Parulidae	—	1	1
Icteridae	1	—	1
Totals	46	12	58

possibly compete with both the Andean Lapwing *Vanellus resplendens* and the Tawny-throated Dotterel *Oreopholus ruficollis* in the Andes, although the native birds tend to prefer drier ground. On the coast, the Semipalmated Plover *Charadrius semipalmatus* certainly competes with the native race of the Kentish Plover *C. alexandrinus,* but the resident Killdeer *C. vociferus* favours marshier situations and is a substantially larger bird.

The huge passage and wintering flocks of Franklin's Gulls *Larus pipixcan* crowd the south Peruvian beaches when most of the population of Grey Gulls *L. modestus* has shifted southwards to breed in the north Chilean deserts. The latter's post-breeding return overlaps to some extent the departure of the Franklin's Gulls, but even when both species are present in large numbers there is little obvious competition between them, since the Franklin's Gull is a much more generalized feeder than the Grey Gull. Other native gulls such as the Kelp Gull *L. dominicanus,* Band-tailed Gull *L. belcheri* and Grey-hooded Gull *L. cirrocephalus* have much smaller populations: the first 2 are large, predatory and strictly marine species, while the last is largely restricted to coastal lagoons.

The Nearctic-breeding terns, especially the Elegant Tern *Sterna elegans* and the Common Tern *S. hirundo* are seasonally much more numerous than any of the native terns and in coastal and Andean Peru there are no native Black Skimmers *Rynchops nigra*. Nor are there any native skuas, but in the austral winter Great Skuas *Catharacta skua* from Magellanic South America visit south Peruvian waters and there is some overlap with the Nearctic skuas in October and March–April. However, no interactions have been seen between them, *Catharacta* tending to victimize boobies and the larger gulls, whereas the 2 *Stercorarius* species harry terns.

Hirundines and swifts are the only conspicuous Nearctic passerines and near-passerines in southwest Peru. The Barn Swallow *Hirundo rustica* is much more abundant than any native swallow in the coastal region between October and April; but in the Andes above 1500 m it is always out-numbered by the Blue-and-White Swallow *Notiochelidon cyanoleuca* at intermediate levels up to 3000 m and by Andean Swallows *Petrochelidon andecolus* above 3000 m. Similarly, the Chimney Swift *Chaetura pelagica* outnumbers the Andean Swift *Aeronautes andecolus* on the coast, but in the West Andean valleys the situation is reversed and neither occurs much above 3500 m.

Migrant species of other families are each represented by no more than 1–2 species, several of them merely vagrants; apart from the Osprey *Pandion haliaetus* which has no resident populations in South America, none of them appear dominant over native representatives of the same families.

SPECIES ACCOUNTS

BLUE-WINGED TEAL ***Anas discors***

Of annual occurrence in small numbers, usually in pairs or up to 10 together, at the coastal lagoons of Dept. Arequipa (Mejía, Pucchún), the southern limit of its regular wintering range. Associates closely with native ducks, especially *A. cyanoptera* and *A. bahamensis*. Mainly Nov-Mar, but as early as Aug in 1954 and 1979.

BROAD-WINGED HAWK *Buteo platypterus*
Vagrant to the coast. Only 2 records: an adult in irrigated farmland near Mollendo (Arequipa) 22 Dec 1972 to 20 Mar 1973 and an immature there, 17 Oct 1980.

OSPREY *Pandion haliaetus*
Regular along the whole coast at any time, more commonly Nov-Apr. Usually singly, but at favoured sites, such as the Mejía Lagoons, up to 10 along 3–4 km of shoreline. Not seen in the West Andean region but surprisingly one was observed 16 Oct 1983 at Lake Titicaca (3810 m) flying across the bay at Puno being mobbed by *Larus serranus*. Also reported by N. Krabbe from Lake Junín (4090 m), central Peru; so the Osprey may penetrate the high Andes fairly regularly.

PEREGRINE *Falco peregrinus*
Breeding. Suspected in West Andean foothills near Tacna (Ellis & Glinski 1980). (See Jenny *et al*. 1981, 1983, Schoonmaker *et al*. 1985 for proof of breeding in Ecuador and Peru.)
Regular Sep-Apr along coast, preying on waders, especially *Calidris alba*, but also *Tringa* spp. and *Numenius phaeopus*, *Sterna hirundo*, unidentified *Oceanites* sp. (on Arequipa and Tacna coasts), doves, hirundines, sparrows and *Geositta cunicularia* (once). Only recorded in Arequipa, Western Andes (2300–2600 m) Oct to early May and 1 at Chivay (3500 m), 7 Oct 1984. Only 2 records, singletons, on *Altiplano*: near Juliaca (3820 m), Dept. Puno, 17 Nov 1976 and near Puno (3880 m) 16 Oct 1983.

GREY PLOVER *Pluvialis squatarola*
Regular along the coast Sep-Apr, occasionally in other months. Mostly in groups of up to 40, but as many as 300 at times. Favour sandy beaches and coastal lagoons. Sometimes in breeding plumage (Aug-Sep, Apr-May) but over-summering birds invariably retain non-breeding plumage.

LESSER GOLDEN PLOVER *Pluvialis dominica*
A double passage-migrant occurring mainly Oct-Nov and Feb-Apr with maximum numbers in March. Much more numerous in bogs and damp grasslands of the Andes than along the coast, with flocks of hundreds at times on the *Altiplano*. Observed as high as 4400 m (Laguna del Indio, Dept. Arequipa). On the coast, is more regular than implied by the literature, on grassy terrain, ploughed fields and lagoons, rarely ocean beaches.

SEMIPALMATED PLOVER *Charadrius semipalmatus*
Regular along the coast Aug-May, occasionally Jun-Jul. Usually in parties of up to 12 together at the muddy margins of coastal lagoons, where they associate with resident *C. alexandrinus*, and also at times on sandy beaches, less often on rocky stretches of the seaboard.

SURFBIRD *Aphriza virgata*
Regular along the coast on passage, some wintering locally on suitably rocky sections, Aug-Mar, often together with *Arenaria interpres*. Resident birds exploiting the rocky coast environment include Blackish Oystercatchers *Haematopus ater* and Surf Cinclodes *Cinclodes taczanowskii* but I have no evidence of interspecific hostility with Surfbird. No May or Jul records, but on 25 June 1975 I saw 48 Surfbirds at Chala (Dept. Arequipa), many in breeding plumage.

RUDDY TURNSTONE *Arenaria interpres*
Regular along the coast Aug-May, most plentiful on passage, with at least a few every year May-Jul inclusive. Usually in groups of up to 15, but as many as 300+ on occasion. Occurs anywhere along the coast, on rocky and sandy sections alike, also regularly at coastal lagoons.

SOLITARY SANDPIPER *Tringa solitaria*
Vagrant, mainly east of the Andes. Occurs only as far south as Lima, west-central Peru, but uncommonly even there (Koepcke 1970), with only a single record further south from Tarapacá in northernmost Chile (McFarlane 1974). I have 5 records in the Mollendo–Mejía

district of coastal Arequipa – 21 Dec 1974, 25 Aug 1976, 22 Oct 1976, 16 Aug 1980 and 8 Oct 1980 – in each case singletons feeding along ditches or small puddles in irrigated farmland. Has also been recorded from Lake Umayo (3820 m) in the *Altiplano* of Dept. Puno (Scott & Carbonell 1986).

LESSER YELLOWLEGS *Tringa flavipes*
Regular Aug-May around lagoons, lakes, pools, riverbanks, flooded grasslands and marshy tracts from the coast to well over 4000 m in the Andes, often together with *T. melanoleuca*. More numerous during the 2 passage periods, especially Mar-Apr, when flocks of hundreds occur especially at coastal lagoons. Very occasional Jun-Jul; oversummers far less frequently than *T. melanoleuca*.

GREATER YELLOWLEGS *Tringa melanoleuca*
Regular throughout, in suitable habitats, from the coast to as high as 4470 m in the Andes (Crucero Alto, Dept. Arequipa). Most numerous Sep-Apr and, unlike *T. flavipes*, not noticeably more abundant in spring. Usually in parties of up to 20, never in large flocks. Isolated birds occur every year May-Jul at high altitudes in the Andes as well as along the coast.

SPOTTED SANDPIPER *Actitis macularia*
Regular Aug-May along the coast and in West Andean river valleys up to at least 3400 m (Colca valley, Dept. Arequipa) but never seen in the *Altiplano*. Usually singly or in pairs along riverbanks, ditches and lagoon margins, rarely on occasion beaches or rocky coves. From mid April onwards and sometimes in August is often in breeding plumage.

WILLET *Catoptrophorus semipalmatus*
Regular along the coast Aug-Mar in variable numbers. Favours sandy beaches but also visits coastal lagoons. Usually fewer than 10 together, but on 31 Dec 1983 a flock of 250 was present at the mouth of the Tambo river near Mejía and I have several sightings of 50+ from the same area. In 1982 26 were present in a flock at Mejía all Jun-Jul.

KNOT *Calidris canutus*
Regular but scarce, on sandy beaches and lagoon margins, often with *Pluvialis squatorola*, Aug-Apr. Up to 5 together, but 80 at Mejía, 1 May 1970, some assuming breeding plumage, with, exceptionally, 3 birds in full breeding plumage there 3 July 1982.

LEAST SANDPIPER *Calidris minutilla*
Regular at coastal lagoons Aug-Apr. No evidence of passage peaks and usually up to 30 together. Of at least casual occurrence in the Andes: a singleton with *C. bairdii* at Lake Titicaca, near Puno, 16 Dec 1968; and B. Wylie reported 1 from a bog near Sumbay, Dept. Arequipa (4100 m), 25 Oct 1984. Already reported from the high Andes of Bolivia by Pearson (1975).

BAIRD'S SANDPIPER *Calidris bairdii*
The most wide-ranging of all Nearctic migrants, occurring from the ocean beaches up to at least 4700 m in the Andes (Toroya, Dept. Arequipa), frequenting diverse habitats, including sandy beaches, the margins of lakes and pools, etc, but most frequently bogs and grasslands, sometimes at some distance from water. On the coast is primarily a double passage-migrant, late Jul-Nov and again Feb-Apr, but many winter in the high Andes, especially on the *Altiplano*, where flocks of hundreds may be seen. Numbers vary annually in the coastal region, always in much smaller numbers, often singly and rarely up to 50. Occasionally lingers into May, but I have only 3 Jun records, all of singletons at Mejía: 3 Jun 1982, 11 Jun 1982 and 16 Jun 1984.

WHITE-RUMPED SANDPIPER *Calidris fuscicollis*
Vagrant on the Pacific Coast, its migratory routes and wintering grounds lie to the east of the Andes. My only records are of 3 near Mollendo, 14 Apr 1956 and singles at Mejía, 29 Nov 1970, 5 Nov 1976 and 19 Feb 1986.

PECTORAL SANDPIPER *Calidris melanotos*
A double passage-migrant late Jul-Nov and Feb-Apr from the coast to at least 4400 m in the Andes (Laguna del Indio, Dept. Arequipa), at flooded grasslands, bogs and the margins of lakes and lagoons, usually fewer than 20 together. Small numbers may winter on the *Altiplano*.

SEMIPALMATED SANDPIPER *Calidris pusilla*
Regular mid Aug to Apr at coastal lagoons, and usually the most numerous of the small *Calidris* species. No passage peaks, but usually most plentiful Dec-Feb. No May-Jul records.

WESTERN SANDPIPER *Calidris mauri*
Probably under-recorded due to its great similarity to and close association with *C. pusilla*. A few, seldom as many as 10 together, occur virtually every year at Mejía, Sep-Apr, among considerably larger numbers of *C. pusilla*.

RUFOUS-NECKED STINT *Calidris ruficollis*
An East Palaearctic migrant breeding sporadically in Alaska (Cramp & Simmons 1983). On 23 Aug 1985 I observed an individual in its diagnostic summer plumage at Mejía. J. P. Myers (*in litt.* 7 Sep 1985) stated: "The only possible source of confusion is a very bright Little Stint *C. minuta*, and that would never come truly close to a bright breeding plumaged Rufous-necked. Rufous-necks are appearing with some regularity now in the USA. Their detection in South America was only a matter of time." This would seem to be the first record for the species in South America.

SANDERLING *Calidris alba*
The sandy beaches of southwest Peru hold some of the largest wintering concentrations of Sanderlings in the Western Hemisphere (J. P. Myers). Recorded in every month, the largest numbers during the 2 passage periods and, more locally, throughout the austral summer. Occurs primarily along the ocean beaches, feeding on the small sand-crab *Emerita analoga* and subjected to considerable harassment by *L. modestus* and *L. pipixcan* and by *Sterna hirundo* in usually unsuccessful attempts to rob them of their food. Also present in relatively small numbers at coastal lagoons.

STILT SANDPIPER *Micropalama himantopus*
Regular at coastal lagoons, Sep-Apr, with scattered records for all other months. Sometimes more than 50 together, often in association with the 2 yellowlegs. Seen once on the ocean beach: 12 near La Yarada (Dept. Tacna), 17 Mar 1984. I have no records for the Andes; Scott & Carbonell (1986) list it from the Lake Arapa and Taraco district of the *Altiplano* of Puno department at 3810 m.

BUFF-BREASTED SANDPIPER *Tryngites subruficollis*
Recorded only since 1984 and from a single site, a patch of dry hummocky grassland near Mejía. First seen there by W. Wyper, 19 Feb 1984, confirmed by me next day (20 birds); subsequently occurred 26 Feb 1984 (11), 27 Mar 1984 (1), 6 Apr 1984 (45), 22 Feb 1985 (2), 28 Feb 1985 (6), 23 Mar 1985 (1), 10 Apr 1985 (10), 11 Dec 1985 (6), 19 Feb 1986 (5), 28 Feb 1986 (2), 8 Apr 1986 (5) and 25 Apr 1986 (2). None seen in the 1986–87 season despite repeated searching. The main wintering grounds are in eastern Argentina; seldom recorded from anywhere along the Pacific Coast.

UPLAND SANDPIPER *Bartramia longicauda*
Casual on the Pacific Coast; its wintering grounds are in southeastern South America. My only record is of one on grassland near Mejía, 10 Apr 1985. R. Ridgely observed the species in the same general area, 28 Feb 1977.

WHIMBREL *Numenius phaeopus*
Regular along the coast, recorded in every month. Particularly numerous during the 2 passage periods, frequently 50–100 together, smaller numbers remaining throughout the

austral summer. Regular Jun-Jul, but usually only singly. Visits ocean beaches, lagoon margins, farmland, etc, sometimes penetrating some distance up coastal valleys, but I have no records from the Andes.

HUDSONIAN GODWIT ***Limosa haemastica***

Scarce but annual visitor to coastal lagoons, much more regular than implied by the literature, mainly Sep-Apr, but a few May-Aug sightings, including 3 at Ite (Dept. Tacna), 29 Jul 1984, the first for that department. Usually up to 5 together, but 18 were seen at Mejía on several dates Mar-Apr 1986. Birds Apr-May have sometimes been in breeding plumage.

MARBLED GODWIT ***Limosa fedoa***

A vagrant to the coast of Peru; its wintering grounds are in the southern Nearctic, Mexico and Central America. Four records, all from Mejía: 8 Dec 1969 (1), 5 Nov 1975 (1), 10 Jun 1977 (2, still present 28 June when seen also by D. R. Paulson) and 26 Sep 1986 (1).

COMMON DOWITCHER ***Limnodromus griseus***

Regular in very small numbers to coastal lagoons Aug-May, mostly Jan-Mar. Usually fewer than 6 together and never more than 10. Sometimes in breeding plumage (Aug and May).

GREY PHALAROPE ***Phalaropus fulicarius***
RED-NECKED PHALAROPE ***Lobipes lobatus***

Specific identification of birds seen off the beaches is often impossible. Both have been positively identified and both, especially *lobatus,* sometimes visit coastal lagoons, but nearly always flocks are seen on or over the sea where they tend to congregate along the foam-lines some distance offshore. Numbers vary greatly annually from very few some years (1983, 1984) to thousands in others (1982, 1985). Largest numbers usually occur Sep-Nov, but I have records for all months. I have seen *fulicarius* in breeding plumage Aug-Sep; and on the exceptional date of 8 Jul 1986 a summer-plumaged *lobatus* was noted at Mejía Lagoons.

WILSON'S PHALAROPE ***Steganopus tricolor***

Mainly a double passage-migrant late Aug to Oct and Feb to early May, but many winter on high Andean lakes. Occasional Jun-Jul at coastal lagoons. Occurs from sea-level to well over 4000 m in the Andes and at peak passage flocks of hundreds, sometimes thousands, may be seen at lagoons, lakes, pools and flooded grasslands. Most birds seen Apr-May are in breeding plumage.

ARCTIC SKUA ***Stercorarius parasiticus***
POMARINE SKUA ***Stercorarius pomarinus***

Common over coastal waters Oct-Apr with up to 2 occasionally May-Sep. Usually singletons or pairs, but up to 50+ at concentrations of terns and gulls around inshore fishing-boats. Distant identifications often inconclusive, but the great majority are *parasiticus, pomarinus* having seldom been positively identified. I have no records of *S. longicaudatus,* which has been reported from Chilean seas. The predominant prey species is *S. elegans* but they also harry *S. sandvicensis, S. hirundo* and, less so, *Larosterna inca* and *Larus pipixcan*. Pale birds predominate over the other morphs 10 : 1.

LAUGHING GULL ***Larus atricilla***

A scarce visitor to the coast; this is at the southern limit of its wintering range. 1-2 singletons recorded almost every year in the Mollendo–Mejía district, generally Jan-Mar but as early as 9 Oct 1985 and as late as 26 May 1984, the latter in full breeding plumage.

FRANKLIN'S GULL ***Larus pipixcan***

Regular along the coast late Oct to early May, in immense numbers on passage and very abundant throughout the austral summer months. Most years is completely absent Jun-Sep inclusive. Most plentiful along sandy beaches but large flocks often visit coastal lagoons and irrigated farmlands near the sea, especially paddyfields. Breeding plumage assumed in March.

Some years, for reasons which are unclear, flocks penetrate far up the West Andean valleys, reaching the Arequipa district (2300–2600 m) with some regularity and the Colca valley (3200–3500 m) occasionally. Rarely, penetrates even further – 30+ on 9 May 1976 at Lake Titicaca, near Puno and a singleton, 7 Dec 1976, at Cabanillas (3850 m) in the *Altiplano* of Dept. Puno. The West Andean passes to the Titicaca Basin are at a minimum altitude of 4400–4500 m. A flock of 200 observed by J. Fjeldså at Lake Lagunillas (4160 m) Dept. Puno, Dec 1977 (Scott & Carbonell 1986) must have been in transit.

SABINE'S GULL *Xema sabini*

The seas off Peru are one of the main Pacific wintering areas of Sabine's Gull (Chapman 1969), but it is seldom seen from land. Recorded from the Mollendo district Aug-Mar inclusive, usually singletons or pairs but on 16 Sep 1968, 61 passed SE close inshore within an hour and on 25 Oct 1970 I saw a flock of 30 from a fishing-boat 5 miles offshore. A bird at Mollendo, 14 Aug 1969, was still in full breeding plumage.

BLACK TERN *Chlidonias niger*

Irregular at coastal lagoons, mostly Dec-Mar, but recorded also Apr, Jul, Aug, Sep and Oct. Some years it is absent (1984, 1985), but in others plentiful, e.g. 1972–3 when as many as 120+ were counted at Mejía Lagoons on several dates between Dec and Mar. Birds in Jul and Aug have been in breeding plumage.

GULL-BILLED TERN *Gelochelidon nilotica*

Regular but very scarce along the coast, most frequently at lagoons but also, at times, along ocean beaches, in all months, mostly Nov-Apr. Usually singly and never more than 6 together. Almost always in non-breeding plumage.

COMMON TERN *Sterna hirundo*

Regular and numerous along the coast Oct-Apr with weakly defined passage peaks. Scattered singletons most years Jun to Sep. At sandy beaches, form monospecific roosts of hundreds at certain locations, or parts of larger aggregations which include *S. elegans, S. sandvicensis, L. pipixcan, L. modestus* and sometimes *Rynchops nigra* as well. Feeds almost exclusively on the sand-crab *Emerita analoga* taken in the wave-washed zone between the line of breakers and the shoreline (H. Blokpoel) and seldom fishes beyond the breakers. Kleptoparasitic chases of *Calidris alba* are often seen. Invariably in non-breeding plumage until early Apr when a small minority begin to assume breeding plumage. A number of wing-tagged birds, marked by the Canadian Wildlife Service at nesting colonies on Lake Ontario, were observed and individually identified on the Mollendo–Mejía beaches in the northern winters of 1982–83, 1983–84 and 1984–85.

ARCTIC TERN *Sterna paradisaea*

Probably under-recorded but a few are positively identified each year in the Mollendo–Mejía district, mostly Oct, Mar and Apr, but also Feb, May, Jun and Nov. Occasionally up to 10 together, sometimes alone but more often together with *S. hirundo*.

LEAST TERN *Sterna antillarum*

Recorded only in recent years, always at the Mejía Lagoons and involving 1-2 birds: 18 Dec 1982, 26 Dec 1982, 26 Sep 1983, 31 Dec 1983, 15 Feb 1984, 2 Mar 1984, 3 Jul 1984, 27 Sep 1984, 25 Oct 1984, 21 Feb 1985, 10 Oct 1985, 5 Nov 1985, 26 Nov 1985, 22 Jan 1986, 26 Sep 1986 and 25 Oct 1986. Seen also by W. Wyper, D. A. Scott, J. Parslow, T. Schulenberg, B. Wylie, amongst others. Since only 1982 has been observed on the Peruvian coast and since then farther north in central Peru (R. Schulenberg). At least some of the more distant sightings may refer to the very similar Yellow-billed (no black tip) Tern *S. superciliaris*, as yet unrecorded from the Peruvian cost.

ROYAL TERN *Sterna maxima*

Small numbers winter regularly as far south as west-central Peru (Parácas Bay, Dept. Ica), but is only a rare vagrant farther south. I have fewer than 10 records (Nov-Mar), never more than one in any year. These few were with *S. elegans*, and were readily separable by their larger size and bulkier build, but distant views are often inconclusive; possibly under-recorded.

ELEGANT TERN *Sterna elegans*

Regular along the coast Oct-Apr; abundant, sometimes in thousands, on passage considerable numbers remaining throughout the austral summer. I also have records for May-Sep inclusive, mostly of singletons. Large roosts, often mixed, are formed on sandy beaches. Unlike *S. hirundo* invariably fishes beyond the line of breakers, where they suffer much harassment by skuas. Breeding plumage is assumed in Feb and courtship activities, both ground and aerial, begin in Mar and by the time of the main Apr departure many birds are apparently already paired.

SANDWICH TERN *Sterna sandvicensis*

Regular along the coast Nov-Apr in relatively small numbers, seldom more than 20 together, and with no passage peaks. I also have a few records for Oct, May and Jun. Associates closely with *S. elegans* and similarly fishes beyond the breakers. Unrecorded until Apr 1973, but seen every year since. Until 1972 recorded for Peru only from Sechura Bay, Dept. Piura (Campbell 1971) and not recorded by Koepcke (1970). Since 1973, however, has been reported from numerous points along the Peruvian coast and even from Arica in northernmost Chile (McFarlane 1974); a definite expansion in the wintering range seems to have taken place.

BLACK SKIMMER *Rynchops nigra*

Regular along the coast Oct-Apr, characteristically in large flocks over certain restricted stretches of beach, usually close to coastal lagoons or river-mouths, with only small groups elsewhere. Flocks of 5000–10,000 birds occur at times in the Mejía district. Recorded also in all other months, but Jun-Sep sightings are very few and of small numbers of birds. Murphy (1936) records, remarkably, one at Lake Titicaca, but I have never seen the species anywhere in the Andes. Resident populations occur along the lowland rivers of southeast Peru and the origin of the Titicaca bird can only be a matter of speculation.

YELLOW-BILLED CUCKOO *Coccyzus americanus*

Accidental visitor to the coast: one record, of a bird in my garden near Mollendo, 17 Dec 1980. Although known to winter as far south as northern Argentina, this seems to be the first record for the Pacific slope of Peru.

CHIMNEY SWIFT *Chaetura pelagica*

Regular along the coast and in West Andean valleys Nov-Apr, occurring annually as high as 2500 m near Arequipa and at least occasionally as high as 3000 m (Huanca, Dept. Arequipa – B. Wylie). Frequents irrigated farmland, suburban areas and even city centres; at dusk on 21 Dec 1979 a flock of at least 300 was watched hurtling round over a small square in the middle of the city of Tacna, no doubt a pre-roost gathering.

EASTERN KINGBIRD *Tyrannus tyrannus*

A rare vagrant to the coast. All my records are from irrigated farmland near Mollendo: 28 Feb 1970 (2), 30 Nov 1970 (1), 22 Jan 1971 (1), 1 Jan 1972 (1), 21 Jan 1973 (1), 28 Oct 1973 (1), 6 Feb 1976 (1) and 13 Feb 1976 (2).

OLIVE-SIDED FLYCATCHER *Nuttallornis borealis*

Accidental on the coast. One record, a bird in my garden near Mollendo, 29-31 Oct 1979, hawking from different perches in a line of *Casuarina* trees. Normally winters along the humid eastern slopes of the Andes between Colombia and Bolivia (de Schauensee 1970). This is apparently the first record for the Pacific slope of Peru.

SAND MARTIN *Riparia riparia*

Regular along the coast Sep-Apr, most in evidence Oct-Nov, often together with far larger numbers of *Hirundo rustica*. Relatively few, seldom more than 30–50 together, remain throughout the austral summer in favourable areas such as the proximity of coastal lagoons. Wanders occasionally up the West Andean valleys to as high as 2300 m, where I have seen it near Arequipa.

BARN SWALLOW *Hirundo rustica*

Occurs virtually throughout southwest Peru, abundantly along the coast but in only small numbers at high altitudes in the Andes. From the coast I have records for all months, but is usually absent between mid May and late Aug. Passage is conspicuous, Oct-Nov, as a thin but continuous stream, which may last for days together. Large numbers winter in suitable areas, such as coastal wetlands and irrigated farmlands up to 1500 m, but is rare at higher altitudes and then principally on passage. None winters on the *Altiplano*; small numbers trickle through chiefly Oct-Nov, but also in Apr, and would have to have risen above elevations of 4400 m. The species has already been recorded from extremely high levels in the Bolivian Andes (Dott 1985).

CLIFF SWALLOW *Petrochelidon pyrrhonota*

Regular along the coast, primarily on both passages, especially Oct-Nov. Very few seen Dec-Feb and I have no records for May-Aug inclusive. The least numerous of the three Nearctic hirundines known from southwest Peru. Scarce away from the coast, but I have records for Arequipa (Dept. Arequipa), Moquegua (Dept. Moquegua) and Locumba (Dept. Tacna) at 600–2300 m in the West Andean valleys and it reaches the *Altiplano* at times: on 16 Oct 1977 I watched one hawking together with Andean Swallows *P. andecola* at Lake Umayo (Dept. Puno), 3820 m, and on 28 Oct 1983 noted 2 migrating south together with *H. rustica* near Chuquibambilla (Dept. Puno) 3950 m.

SWAINSON'S THRUSH *Catharus ustulatus*

Occurs almost annually on the coast, always singly except once 2 together, Dec 1980. All were in my garden near Mollendo and all between late Nov and early Jan. Skulks in shady corners, so may be under-recorded. Is attracted to the ripe berries of *Lantana* shrubs. The main wintering grounds are along the humid eastern slopes of the Andes between Venezuela and northwest Argentina and there are very few records from the Pacific slope of Peru.

RED-EYED VIREO *Vireo olivaceus*

Accidental on the coast. I have only 3 records, of single birds in my garden near Mollendo: 30 Nov 1969, 5 Apr 1981 and 16 Feb 1985. In view of the dates, they were presumed to be of the strongly migratory Nearctic-breeding race, for which there is a record from as far south as Vallenar, Chile (Johnson 1965), rather than of any of the less migratory South American races of the species.

BOBOLINK *Dolichonyx oryziborus*

Recorded annually in coastal wetlands, Dec-Feb, usually in *Typha*. Up to 30+ seen at Mejía. Winters mainly in grasslands of central South America, but some move down the Pacific Coast, even as far as Antofagasta, Chile (Howell 1975).

AMERICAN REDSTART *Setophaga ruticilla*

A rare vagrant to the coast. All my records are of single, female- or immature male-plumaged individuals in my garden near Mollendo: 24 June 1971, 14-15 Aug 1971, many dates in Jun-Jul 1973, 25 Dec 1975, 28 Nov 1978 and 21-22 Oct 1986. The protracted stays and remarkable dates of the 1971 and 1973 birds seem noteworthy.

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APPENDIX

OCCURRENCE OF NEARCTIC MIGRANTS IN SOUTHWEST PERU

	PACIFIC COAST						W. ANDES					ALTIPLANO		
	a	b	c	d	e	f	a	b	c	d	e	a	b	c
Anas discors, Blue-winged Teal	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Buteo platypterus, Broad-winged Hawk	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Pandion haliaetus, Osprey	—	X	x	—	x	X	—	—	—	—	—	—	—	V
Falco peregrinus, Peregrine	x	X	X	x	X	X	x	—	—	X	—	x	x	—
Pluvialis squatarola, Grey Plover	—	X	—	—	—	X	—	—	—	—	—	—	—	—
Pluvialis dominica, Lesser Golden Plover	—	x	—	—	X	X	—	—	—	—	X	X	X	X
Charadrius semipalmatus, Semipalmated Plover	—	x	—	—	—	X	—	—	—	—	—	—	—	—
Aphriza virgata, Surfbird	—	X	—	—	—	—	—	—	—	—	—	—	—	—
Arenaria interpres, Ruddy Turnstone	—	X	—	—	—	X	—	—	—	—	—	—	—	—
Tringa solitaria, Solitary Sandpiper	—	—	—	—	V	V	—	—	—	—	—	—	—	V
Tringa flavipes, Lesser Yellowlegs	—	x	—	—	x	X	—	—	—	x	X	—	—	X
Tringa melanoleuca, Greater Yellowlegs	—	x	—	—	x	X	—	—	—	x	X	—	—	X
Actitis macularia, Spotted Sandiper	—	x	—	—	X	X	—	—	—	X	—	—	—	—
Catoptrophorus semipalmatus, Willet	—	X	—	—	—	x	—	—	—	—	—	—	—	—
Calidris canutus, Red Knot	—	x	—	—	—	x	—	—	—	—	—	—	—	—
Calidris minutilla, Least Sandpiper	—	—	—	—	—	X	—	—	—	—	V	—	—	V
Calidris bairdii, Baird's Sandpiper	—	X	x	—	x	X	—	—	—	x	X	X	X	X
Calidris fuscicollis, White-rumped Sandpiper	—	—	—	—	—	V	—	—	—	—	—	—	—	—
Calidris melanotos, Pectoral Sandpiper	—	x	—	—	x	X	—	—	—	—	X	x	x	X
Calidris pusilla, Semipalmated Sandpiper	—	x	—	—	—	X	—	—	—	—	—	—	—	—
Calidris mauri, Western Sandpiper	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Calidris ruficollis, Red-necked Stint	—	—	—	—	—	V	—	—	—	—	—	—	—	—
Calidris alba, Sanderling	—	X	—	—	—	X	—	—	—	—	—	—	—	—
Micropalama himantopus, Stilt Sandpiper	—	x	—	—	—	X	—	—	—	—	—	—	—	x
Tryngites subruficollis, Buff-breasted Sandpiper	—	—	—	—	x	—	—	—	—	—	—	—	—	—
Bartramia longicauda, Upland Sandpiper	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Numenius phaeopus, Whimbrel	—	X	x	—	X	X	—	—	—	—	—	—	—	—

	PACIFIC COAST						W. ANDES					ALTIPLANO		
	a	b	c	d	e	f	a	b	c	d	e	a	b	c
Limosa haemastica, Hudsonian Godwit	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Limosa fedoa, Marbled Godwit	—	—	—	—	—	V	—	—	—	—	—	—	—	—
Limnodromus griseus, Common Dowitcher	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Phalaropus fulicarius, Grey Phalarope	X	—	—	—	—	x	—	—	—	—	—	—	—	—
Lobipes lobatus, Red-necked Phalarope	X	—	—	—	—	x	—	—	—	—	—	—	—	—
Steganopus tricolor, Wilson's Phalarope	x	—	—	—	x	X	—	—	—	—	X	—	—	X
Stercorarius parasiticus, Arctic Skua	X	—	—	—	—	—	—	—	—	—	—	—	—	—
Stercorarius pomarinus, Pomarine Skua	x	—	—	—	—	—	—	—	—	—	—	—	—	—
Larus atricilla, Laughing Gull	x	x	—	—	—	—	—	—	—	—	—	—	—	—
Larus pipixcan, Franklin's Gull	X	X	x	—	X	X	—	—	—	x	—	—	—	V
Xema sabini, Sabine's Gull	x	—	—	—	—	—	—	—	—	—	—	—	—	—
Chlidonias niger, Black Tern	x	—	—	—	x	x	—	—	—	—	—	—	—	—
Gelochelidon nilotica, Gull-billed Tern	—	x	—	—	—	x	—	—	—	—	—	—	—	—
Sterna hirundo, Common Tern	X	X	—	—	—	X	—	—	—	—	—	—	—	—
Sterna paradisaea, Arctic Tern	x	x	—	—	—	—	—	—	—	—	—	—	—	—
Sterna antillarum, Least Tern	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Sterna maxima, Royal Tern	V	V	—	—	—	—	—	—	—	—	—	—	—	—
Sterna elegans, Elegant Tern	X	X	—	—	—	X	—	—	—	—	—	—	—	—
Sterna sandvicensis, Sandwich Tern	X	X	—	—	—	—	—	—	—	—	—	—	—	—
Rynchops nigra, Black Skimmer	X	X	—	—	—	x	—	—	—	—	—	—	—	V
Coccyzus americanus, Yellow-billed Cuckoo	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Chaetura pelagica, Chimney Swift	—	—	—	—	X	—	—	—	—	X	—	—	—	—
Tyrannus tyrannus, Eastern Kingbird	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Nuttallornis borealis, Olive-sided Flycatcher	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Riparia riparia, Sand Martin	—	—	x	—	X	X	—	—	—	x	—	—	—	—
Hirundo rustica, Barn Swallow	—	—	X	x	X	X	—	—	—	x	—	x	x	—
Petrochelidon pyrrhonota, Cliff Swallow	—	—	—	—	x	x	—	—	—	x	—	x	x	—
Catharus ustulatus, Swainson's Thrush	—	—	—	—	x	—	—	—	—	—	—	—	—	—
Vireo olivaceus, Red-eyed Vireo	—	—	—	—	V	—	—	—	—	—	—	—	—	—
Dolichonyx oryziborus, Bobolink	—	—	—	—	—	x	—	—	—	—	—	—	—	—
Setophaga ruticilla, American Redstart	—	—	—	—	V	—	—	—	—	—	—	—	—	—

SYMBOLS

X: Migrants of regular occurrence in moderate to high numbers
x: Migrants of regular occurrence in small numbers
V: Vagrants

PACIFIC COAST REGION

a: Pacific Ocean
b: Pacific Seaboard
c: Loma
d: Superdesert
e: Coastal Valleys & Irrigations
f: Coastal Wetlands

WEST ANDEAN REGION

a: Desert Scrublands
b: Mountain Scrublands
c: Tolar
d: West Andean Valleys
e: West Andean Wetlands

ALTIPLANO

a: Puna Grasslands
b: Altiplano Farmlands
c: Altiplano Wetlands

Additions and corrections to the avifauna of Zaïre (2)

by M. Louette

Received 26 June 1987

These comments are due in part to reidentifications of specimens in Koninklijk Museum voor Midden-Afrika (KMMA). They are a follow up of a first series (Louette 1987).

Necrosyrtes monachus

There is a specimen in KMMA from Yangambi (0°47′N, 24°28′E), a locality situated deep in the forest; nevertheless this bird was collected as long ago as 19 November 1940, when the forest belt was still largely intact. Its wing measurement is 498 mm, therefore it may belong to the race *pileatus*, from southern and eastern Africa.

Accipiter brevipes

This species was overlooked in the checklist of birds of Zaïre (Lippens & Wille 1976), although the KMMA has a specimen from Gangala-na-Bodio (3°41′N, 29°08′E, collected 2 March 1955), as mentioned already by Wattel (1966).

Caprimulgus fraenatus

Colston (*in* Snow 1978) shows a record in Rwanda and another one in NE Zaïre. Both appear to be suspect, if based on Schouteden (1966a, 1968). The Rwanda specimen turns out to be *C. fossii*; the other bird, said to be from Butembo (Zaïre), cannot be found now; possibly it was reidentified and relabelled.

Campethera bennettii

Short & Tarboton (*in* Snow 1978) overlooked the records of this species both in Rwanda and in Burundi (Schouteden 1966a, 1966b), and also in Kasai, Zaïre (Schouteden 1964). Furthermore there is a specimen in KMMA from Kwango.

Apalis binotata and *Apalis personata*

I consider these taxa, up to now generally assumed to be lowland and montane races of one species, as different species, basing myself on zoogeographical distribution, biometry and plumage characteristics (sexual dimorphism and immature plumage).

Distribution and biometry. *A. binotata* is not typically a montane taxon, occurring in 3 regions: firstly in the forested part of lowland Cameroon and also of Gabon (Brosset & Erard 1986); secondly in 2 localities in Cuanza Norte, Angola (Traylor 1963); and finally in central-eastern Africa, at the base of Mt Elgon (wherefrom I examined specimens taken at altitudes "5500 and 6000 feet"), in W Uganda in the Kibale (near Ruwenzori, one of the Kibale specimens bearing the altitude "5200 feet" on the label) and Malabigambo forests (Britton 1980) and in NW Tanzania, where Britton (1980, 1981) lists Bukoba and Minziro – but it was not then known from Zaïre. I found in KMMA, however, 2 specimens from Zaïre collected by Dr A. Prigogine: a male, collected on 16 June 1973 at Burondo (0°17′N, 29°10′E) and a female, collected on 27 January 1970 at Kasebere (0°24′N, 29°21′E), both localities apparently somewhat above 1400 m a.s.l. (Fig. 1). This is west of the Ruwenzori but also they are respectively somewhat west of and on the ridge Beni-Butembo, where *A. personata* occurs. Most importantly, *personata* was also collected at Burondo, proving that the 2 species are locally sympatric there, which is not altogether surprising for altitudinal vicariants; but among all the specimens of *personata* from this area (there are many

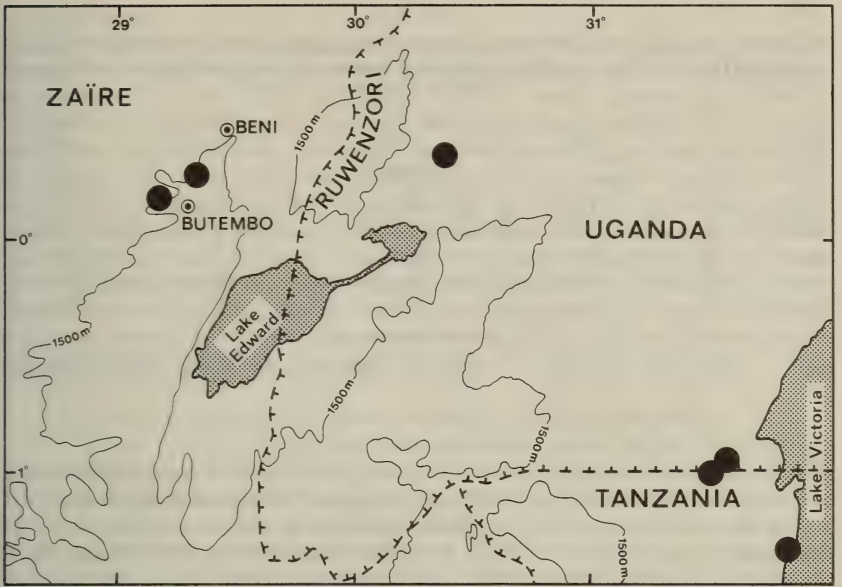

Figure 1. The recorded distribution (●) of *Apalis binotata* in eastern Zaïre and adjacent areas.

specimens in KMMA from the Butembo region, also from localities near Burondo – see e.g. Schouteden 1969) there is not a single one with possible intermediate characteristics. These birds are of course not known to migrate.

The standard measurements of the 2 Zaïre specimens are in the same range as those of specimens from Cameroon and Gabon, from Angola and from Mt Elgon and W Uganda, although the single male measured from W. Uganda has a long tail (Table 1), suggesting that *A. binotata* has to be considered with present knowledge as a monotypic taxon, with several geographically well-separated populations (but see below).

A. personata is a somewhat larger species, differently proportioned and apparently mensurally more sexually dimorphic (especially in tail length – Table 1). It is generally distributed in the montane habitats of eastern Zaïre, from the Lendu Plateau in the north to the Marungu in the south (the Marungu population is slightly different in colour and somewhat larger; it is considered as a separate race – *marungensis* Chapin 1932). *A. personata*'s range includes parts of Rwanda and in Uganda the Impenetrable forest and the Ruwenzori mountain (Britton 1980). Jackson (1938) considered it to be numerous on the Ruwenzori and it is also a common bird on the Zaïre side of this mountain (Chapin 1953). Apparently it occurs normally above 1500 m a.s.l., but Prigogine (1971) gives one locality at 1270 m in Itombwe. Prigogine also collected it in the Beni-Butembo area at about 1400 m.

Plumage characteristics. In *A. binotata* the entire crown and forehead are dark grey in the adult male, the rest of the upper parts being green.

TABLE 1

Measurements (mm) of *Apalis binotata* and *Apalis p. personata* (from KMMA, Muséum National d'Histoire Naturelle, Paris, Durban Museum and the Field Museum of Natural History, Chicago)

Region	Wing n	Wing $\bar{x}$	Wing range	Tail n	Tail $\bar{x}$	Tail range	Total Culmen n	Total Culmen $\bar{x}$	Total Culmen range	Tarsus $\bar{x}$	Tarsus range
					A. binotata						
Zaïre	1♂		49.5			40.5			13.5		18.5
	1♀		47.0			38.5			14.0		18.0
Cameroon &	5♂♂	46.4	45.5–48.0	(4)	39.5	37.5–41.0		14.4	13.5–15.0	18.8	18.0–19.5
Gabon	4♀♀	46.1	44.5–48.5	(3)	36.7	33.0–39.5		13.6	13.0–14.5	19.0	18.5–19.5
Angola	1♂		49.0			42.0			13.5		19.0
	1♀		46.5						13.5		18.5
Mt Elgon	3♂♂	46.3	45.0–47.0		37.8	36.5–39.0	(2)		13.5–14.0	18.5	18.0–19.0
W Uganda	1♂		50.0			46.0			14.5		19.5
	2♀♀		44.0–45.5			36.0–38.5			14.0		17.5–18.0
					A. personata						
Zaïre	10♂♂	54.6	53.0–56.0		45.0	42.5–47.0		14.2	13.5–14.5	20.7	19.5–21.5
	10♀♀	52.4	51.0–54.0		40.0	38.5–41.5		13.7	13.0–14.5	20.3	19.0–21.5

The female differs mainly in having a long white streak reaching forward to the chin on either side of the throat (vestigial in the male) and the colour on the head being possibly a paler shade of grey. However, the colour of the upper breast is black, as in *A. personata.* Bannerman (1939) described the adults in full and Bates (1911) likewise the juvenile "head above green like the back, and the feathers of the throat and chest slate-grey with white tips". There are 2 immature specimens from Cameroon in KMMA, which agree to some extent with this description, but on the throat the dark central part is already well marked (squeezed between the 2 white lateral streaks). Also, the belly is whitish, tinged with yellow and the breast is clearly demarcated in being greenish in one specimen, yellowish in the other. Two immatures from Angola are in a more advanced stage. These characteristic colours on the ventral side are absent in the young *personata,* which is uniform silver-greyish ventrally. Prigogine (1971) described the young and immature plumage of *personata* as follows (my translation) "these birds have a green crown in the first plumage. The chin, which is cream at first, becomes whitish, and only in a later phase black feathers start to appear. Later, the crown becomes greyish-green and the black will become more apparent. Still later, the yellow on the breast appears". The immature is never in a stage where the white and dark colour bands are well-indicated on the throat, as in *binotata,* nor has it ever the yellowish belly colour of the juvenile of that species.

In *A. personata* sexual dimorphism in plumage is not very pronounced: the female scarcely differs from the male (Chapin 1932 gives a good description), both being a more blackish-brown in head colouration, not dark grey as in *binotata.* The green dorsal colour is not abruptly separated from the mantle in the neck. There is also no such white streak on both sides of the throat as in the female *binotata.* However, the single female *binotata* examined from "30 km W Camabatela", Angola, received on loan from the Field Museum of Natural History, Chicago, is much darker blackish-brown on the head than the other *binotata* specimens; it agrees in head colour with *personata,* but the male from that locality does not differ from other *binotata.* The Angola population needs further study.

Sylvietta denti

In KMMA there are 2 apparent immatures of the nominate race of this species with skull ossification not complete, both collected in Kivu, at Kailo – 2°38′S, 26°07′E – 7 August 1957 and Kamituga – 3°04′S, 28°11′E – 29 July 1960. In general plumage characteristics they much resemble the adult, but they are peculiar in having rather broad (up to 2 mm) pale yellowish terminal bars on the greater wing coverts (especially), the mantle, the crown and the secondaries. To a very slight extent the barring mentioned above is also present in a specimen of the race *hardyi* (Liberian Timber Co. base camp at 6°16′N, 8°42′W collected on 27 February 1980). This transition plumage is undescribed and furthermore it is peculiar in the genus *Sylvietta,* of which I have examined immatures of the other species, and give here in short the main difference with the adult plumage:

S. virens: ventrally yellower, dorsally greener generally;
S. leucophrys: darker greyish ventrally, some slight barring on rump;
S. ruficapilla: white ventrally;
S. rufescens: no striking difference;
S. brachyura: no striking difference.

Cisticola cantans

Chapin (1953) doubted the occurrence of this species in Kasai, because he thought Schouteden's Kabambaie (5°45′S, 20°49′E) specimen was misidentified and the citations by Lynes (1930) were not based on specimens. Also Hall & Moreau (1970) do not show this species for the Kasai region. However, in KMMA there are specimens from the following localities, already mentioned by Schouteden (1964): Kasansa (6°33′S, 23°44′E); Kabwe (6°12′S, 22°23′E); Luluabourg (= Kananga) (5°53′S, 22°25′E). The bird from Kabambaie may well also belong to this species.

Ploceus temporalis

There is a specimen by Allard, in Muséum National d'Histoire Naturelle, Paris from Kando (Lualaba) (10°49′S, 26°07′E) collected in September 1955. This is the first record for Zaïre of this Angolan near-endemic. In Zambia it seems limited to northern Mwinilunga adjacent to the area of Kando (Benson *et al.* 1971).

Ploceus xanthopterus

Lippens & Wille (1976) do not mention this species in their check-list of the birds of Zaïre, although Ruwet (1965) claimed to have seen it in the neighbourhood of the Lufira river. As long as no specimen or a better documented observation is available I think indeed that it is the safest course to omit the species from the Zaïre list, especially because it is not known in the neighbouring part of the much better prospected Zambia (Benson *et al.* 1971).

Ploceus flavipes

There is a specimen, formerly misidentified, of this species in KMMA,

collected at Lima, Ituri (0°54′N, 29°13′E) on 13 July 1959, sexed female. This is a new locality for this weaver, known now from 9 specimens, of which Prigogine (1960; and in 1976, *pers. com.*) examined 7. He listed these birds and their localities (q.v.) and they can also be found in Collar & Stuart (1985). I reexamined all the material available in Belgium and that from Naturhistorisches Museum, Vienna and Naturhistoriska Riksmuseet, Stockholm, namely all known specimens, except the type, which is in American Museum of Natural History, New York.

These specimens can be classified in 3 groups as to their general plumage colour: 3 are completely black, 4 specimens are blackish-green on the dorsal side and greenish-grey on the ventral side (called greenish specimens hereafter) and 2 others are in intermediate plumage "becoming black". One of the greenish specimens is definitely a juvenile, with a short bill and with skull ossification not yet started. Another greenish bird and one of the intermediates are also without any skull ossification. A third greenish bird and the second intermediate have more advanced skull ossification and the 2 black specimens examined have the skull fully ossified, as indeed does the fourth greenish bird (Bilolo, sexed female) suggesting it is not very young. Prigogine (1960) stated earlier that the carefully sexed black Tungudu specimen is a male, proving there is no sexual dimorphism in general colour, since the type – also in black plumage – is a female with a developing egg in the oviduct (Chapin 1954). There is thus no question that the greenish colour form corresponds to the female sex only, not as up to now to the immature.

My measurements (in mm) give the following range (in part differing slightly from Prigogine 1960); black and "becoming black" phases: wing 76.0–84.0, tail 42.0–47.0, total culmen 16.0–19.0, tarsus 16.5–19.0. Greenish phase (except juvenile): wing 74.5–82.0, tail 44.5–46.0, total culmen 16.5–19.0, tarsus 17.0–18.0. These measurement ranges are closely similar and indicate that greenish birds are not smaller than black ones; one of each colour form has the bill 19.0 mm long and it may well be that these 2 are in fact males (including the Bilolo bird, greenish, skull fully ossified, but sexed female). That 2 intermediate plumaged birds do not yet have completely ossified skulls is in contradiction to an apparently older bird having full ossification but in greenish plumage, whereas we know that the breeding dress of the female is black. In my opinion one is left with the possibility that this forest weaver assumes a non-breeding dress during a part of the year, for which moult may bring evidence. One intermediate bird, from December, and one black one from August, both have primaries 1-4 old and the others new, though collected at the opposite times of the year. Two of the greenish birds have a single black feather on the throat, including the Bilolo specimen. The months during which the colour morphs were collected are as follows:— black: June, August, September; intermediate: June, December; greenish: February, July; definitely juvenile: June. These data are too fragmentary to confirm the suggestion that there is a nonbreeding dress, but at least there is the evidence that breeding occurs in about May and September. If however the hypothesis of the existence of a non-breeding dress is correct, juvenile specimens are virtually indistinguishable by colour from the eclipse plumage bird.

Anaplectes rubriceps

There is a male specimen of the race *leuconotus* in KMMA, collected on 25 March 1977 at Ngula (4°45′S, 18°11′E), Lower Zaïre, a region where this weaver was not previously known; Hall & Moreau (1970) show that the northernmost birds in Angola also belong to this race, which has bright red on the remiges.

Malimbus rubricollis

There is a specimen in KMMA from Shaba: "Kundelungus" (c. 10°S, 27°45′E) collected 19 April 1964. This is far from the other known localities for this species in Zaïre, all of which are in the equatorial forest belt, the nearest specimens examined being from Kwango and Kivu. Furthermore it is a male specimen (wing 92.0 mm) fitting the description of *praedi,* the race from Angola (specimens examined) of which this would be the first record for Zaïre.

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BOOKS RECEIVED

Isler, M. & Isler, Phyllis R. 1987. *The Tanagers. Natural history, distribution and identification*. Pp. 404. 32 colour plates, maps. Oxford University Press and Smithsonian Institution Press. £65. 235 × 145 mm.

The subfamily Thraupinae contains 242 species, occurring in almost all New World tropical wooded habitats, which between them provide a display of bright coloured birds which may be unrivalled in so large a single group. Each one is here dealt with in comprehensive detail and illustrated by sex and age in 551 colour plumages painted by Morton Isler. Descriptions of habitat, behaviour, breeding and vocalizations are particularly aimed at aiding field identifications and there are 263 maps accompanying the species' texts. In addition, field guide features are given opposite each colour illustration. Each species has a list of sources of the information provided, much of it in collaboration with those with particular expertise in the tropics. The book is admirably organised and produced—a very fine book, but a disturbing price.

Harbard, C. 1987. *A Bird-watcher's Quiz Book*. Pp. 128. Cartoon illustrations by Philip Snow. Collins. Softback. £2·95. 200 × 115 mm.

Stories from the 'Coot and Corncrake' pub, interspersed with innumerable questions of varying ease and perplexity for twitchers and dudes (normal bird-watchers).

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Papers, from Club Members or non-members, should be sent to the Editor, Dr J. F. Monk, The Glebe Cottage, Goring, Reading RG8 9AP, and are accepted on the understanding that they are offered solely to the *Bulletin*. They should be typed on one side of the paper, with treble-spacing and a wide margin, and submitted with a *duplicate copy on airmail paper*. Scientific nomenclature and the style and lay-out of papers and of References should conform with usage in this or recent issues of the *Bulletin*. Informants of unpublished observations should be cited by initials and name only, e.g. "...catches wasps (B. Eater)", but "B.B.C. Gull informs me that ...". Photographic illustrations, although welcome, can only be accepted if the contributor is willing to pay for their reproduction. Authors are requested to give their title, initials, name and full address (in the form they wish to be corresponded with) at the end of the paper.

An author wishing to introduce a new name or describe a new form should append *nom., gen., sp.* or *subsp. nov.*, as appropriate, and set out the supporting evidence under the headings "Description", "Distribution", "Type", "Measurements of Type" and "Material examined", plus any others needed'.

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COMMITTEE

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Bulletin of the

British Ornithologists' Club

Edited by
Dr J. F. MONK

Volume 108 No. 2 June 1988

FORTHCOMING MEETINGS

Monday, 11 July 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7. **Dr Clive Elliott** will speak on **"The Quelea Problem in Africa".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the **HON. TREASURER** at 53 OSTERLEY ROAD, ISLEWORTH, MIDDLESEX TW7 4PW by first post on Monday, 27 June, if possible*.

Dr Elliott, an expert on the Quelea, which he has studied in East Africa for F.A.O. for a number of years, will speak on the birds themselves, including e.g. migrations, multiple breeding, as well as on control of their numbers.

Tuesday, 20 September 1988 at the same place, **Miss C. T. Fisher** will speak on **"Discovery of Australian Birds".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach **Mrs AMBERLEY MOORE** at FLAT 12, HOLLY LODGE, 14 BUCKINGHAM ROAD, HARROW HA1 4TD by first post on Tuesday, 6 September 1988, if possible*.

Miss Fisher, Assistant Keeper of Vertebrate Zoology at the National Museums & Galleries on Merseyside and known to many Members, will speak on the period 1835–1850, in which many species of Australian birds were discovered, illustrated by slides, especially of plates by John Gould, who first described many of them.

Tuesday, 6 December 1988 at the same place, **Dr Michael Rands** will show a film and speak on **"Birds in Yemen and S.W. Arabia and their conservation".**

Tuesday, 7 February 1989 at the same place, **Dr Algirdas Knystautas** will speak on **"Birds of the Soviet Union".**

Tuesday, 9 May 1989 at the same place, **Dr Robin Cox** will speak on **"North Sea Birds".**

*It will be possible to take acceptances up to the weekend before a Meeting, but Members are asked to accept by 14 days before a Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

A plan showing Imperial College will be sent to Members who request it when sending their acceptance for a Meeting.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 108 No 2 Published: 19 June 1988

The seven hundred and seventy-sixth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 19 January 1988 at 7 p.m. The attendance was 29 Members and 14 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), M. A. Adcock, Miss H. Baker, A. H. Baylis, K. F. Betton, Mrs D. M. Bradley, D. R. Calder, P. J. Conder, The Earl of Cranbrook, M. J. Crosby, J. H. Elgood, B. Gray, A. Gibbs, D. Griffin, Dr F. D. Kelsey, Dr M. G. Kelsey, R. H. Kettle, T. R. Mills, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, P. J. S. Olney, R. E. F. Peal, G. Z. Rowe, S. J. R. Rumsey, Dr D. W. Snow, N. H. F. Stone, M. A. Walmsley and Lieut-Col. T. C. White.

Guests present were: Mrs B. E. Adcock, Mrs Gwen Bonham, D. Bradley, Mrs J. B. Calder, Mrs F. M. Farnsworth, Señorita Marta Gómez, R. Innes, C. P. Kelsey, Dr B. Lavercombe, Dr Amicia Melland, P. J. Moore, R. Ranft, Mrs Barbara Snow and Miss C. V. Wilkinson.

Dr Snow spoke on the planning of the current B.O.U. expedition to Colombia, the possible sites and the choice of an area in the Amacayacu National Park on the N. bank of the Amazon just W. of Leticia. Dr M. G. Kelsey, who had returned from the expedition only a little earlier in the month, then spoke of the work carried out to date and showed a number of slides of birds and the country in which the expedition was working.

The seven hundred and seventy-seventh Meeting of the Club was held on Tuesday, 16 February 1988. The attendance was 20 Members and 18 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), Captain Sir Thomas Barlow, R.N., P. J. Belman, Mrs Diana Bradley, D. R. Calder, Commander M. B. Casement, R.N., P. J. Conder, Dr R. A. F. Cox, J. H. Elgood, A. Gibbs, B. Gray, D. Griffin, Mrs A. M. Moore, R. G. Morgan, P. J. Oliver, R. E. F. Peal, N. H. F. Stone, A. R. Tanner, Dr M. A. Walmsley and C. E. Wheeler.

Guests present were: Mrs C. Agius, P. Agius, D. Bradley, Mrs J. Bull, P. Bull, J. Chappell, Mrs P. Chappell, Mrs F. M. Farnsworth, Dr Algirdas Knystautas, P. J. Moore, Mrs I. McCulloch, Dr D. N. Nettleship, Mrs Nettleship, Mrs E. Peal, Mrs Joyce Pope, Mrs Joyce Renshaw, K. Renshaw and Mrs Sheila Stone.

At 6 p.m. in the Lecture Theatre of the British Museum (Natural History), Cromwell Road, S.W.7, Dr David Nettleship showed 2 of his colour films with sound tracks, 'The Sea Ravens' and 'Gannets of Bonaventure Islands'. Mrs Joyce Pope kindly arranged projection of the films. After a short elaboration by Dr Nettleship of some of the points raised in the films, the company proceeded to the Senior Common Room, Sherfield Building, Imperial College. A hot buffet supper was served there at 7.45 p.m., after which Dr Nettleship spoke on 'Status and prospects of seabirds in the N.W. Atlantic', dealing especially with Brünnich's Guillemot (Thick-billed Murre) *Uria lomvia*. An abstract of his address will appear in a future number of the *Bulletin*.

The seven hundred and seventy-eighth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 8 March 1988 at 7 p.m. The attendance was 24 Members and 17 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), M. A. Adcock, Miss H. Baker, P. J. Conder, Dr R. A. F. Cox, J. H. Elgood, A. Gibbs, B. Gray, Dr J. J. D. Greenwood, D. Griffin, P. Hogg, R. H. Kettle, I. T. Lewis, C. F. Mann, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, P. J. Oliver, R. E. F. Peal, R. C. Price, P. J. Sellar, N. H. F. Stone and A. R. Tanner.

Guests present were: Mrs B. Adcock, Dr R. J. Baker, J. Chappell, Mrs P. Chappell, Dr. N. F. Davies, Mrs F. M. Farnsworth, D. Fowler, Mrs E. Fowler, Dr A. N. Lance,

Mrs Isabel McCulloch, D. Milne, P. J. Moore, C. A. Muller, Mrs H. Price, Dr R. P. Prŷs-Jones, Mrs Liz Thurston and M. Thurston.

Dr J. J. D. Greenwood gave an address on 'The summer life of the Snow Bunting'. He described his studies of *Plectrophenax nivalis* during 3 summers spent at Mesters Vig in east Greenland (72°15′N, 24°00′W) and showed slides both of birds there and the habitat.

Significant range extension for *Nectarinia reichenbachii* in West Africa

by W. Parker Cane & Michael F. Carter

Received 25 June 1987

Reichenbach's Sunbird *Nectarinia reichenbachii* is endemic to western Africa, being found regularly along the coast of Gabon and Cameroon where it commonly feeds on the flowers of coconut palms (Chapin 1954). It has often been placed in a separate genus, *Anabathmus* (Bates 1930, Bannerman 1948, Mackworth-Praed & Grant 1973), along with certain nectarinids endemic to the Gulf of Guinea islands, the Principe Sunbird *N. hartlaubii* (Principe Island) and *N. newtonii* of Sao Tome. This group is considered by Hall & Moreau (1970) to form a superspecies comprised of "divergent members" of the *N. verticalis* (Olive-backed Sunbird) group.

To the east, *N. reichenbachii* is found with decreasing frequency as far as the Uele and Kivu districts of NE Zaire, while the western limit of its range was heretofore the Volta River in Ghana (Mackworth-Praed & Grant 1973: 565, Serle *et al.* 1977).

We wish to report a first record for *Nectarina reichenbachii* in Liberia, which represents a range extension westward by c. 1000 km. The bird (AMNH 817779) was collected by MFC on 15 September 1985 at the Poor River Lagoon at New Kru Town, near Greenville, Sinoe County, Liberia (5°02′N, 9°05′W) in a mist net set between mangroves interspersed with a few thorny shrubs. The site was within 25 m of a large Coconut palm plantation and within 50 m of the ocean.

While recent sight records have been reported in the region near Abidjan, Ivory Coast (Demey 1986), to our knowledge the furthest west *N. reichenbachii* has previously been collected was in the Volta River region of Ghana. Further, Bannerman (1948) noted that since the collection of a specimen near the Volta River c. 1870 no one had obtained this sunbird from west of Lagos. During the 20 years 1963–1982 that the Nimba Research laboratory operated in the Mount Nimba region of Liberia, no specimen of *N. reichenbachii* was recorded (Colston & Curry-Lindahl 1986). This is not particularly surprising since most of the work of the unit was carried out at higher elevations in the interior region of Liberia, whereas Reichenbach's Sunbird is most commonly found in localities near the sea. Since the coastal areas of Liberia have been relatively poorly explored ornithologically it is possible that this species has been overlooked in the past. However, *reichenbachii* favours open places such as gardens and abandoned farmland (Serle *et al.* 1977), and

this record may be another example of a species which favours second growth habitat extending its range into previously undisturbed areas as forest clearing occurs.

Description of specimen (colour code reference is Smithe 1975)

Wing (chord) 54 mm, tail 42 (somewhat worn), culmen from nostril 13.7, exposed culmen 16.7, tarsus 17 mm. Chin and throat pale olive-yellow (52) which extends irregularly along sides of upper breast; some feathers on upper breast are all or partly the glossy blue-black (90) typical of the adult plumage. The pectoral tufts are spectrum yellow (55). The abdomen is generally olive grey (42) with undertail coverts olive-yellow (52), this colour extending along the midline of the abdomen. Dorsally the bird is generally olive-green (46) with most of the crown feathers showing some glossy blue-black. The centres of the mantle feathers are dark (some showing faint barring) with olive-green edges. There is a general lightening of the dorsal plumage posteriorly, the rump feathers being olive-yellow. The uppersides of the rectrices, which are strongly graduated, are sepia (219) with the undersides of the outer 4 pairs having greyish-white tips. When collected, the soft parts were recorded as iris black, feet and legs black, the weight as 9.8 gms.

The plumage of the Liberian bird is similar to that of another specimen in the AMNH series (AMNH 690373) collected by Ansorge in June 1907 near Lake Ogemwe in Gabon. Bannerman (1948) describes 6 plumage stages for *N. reichenbachii*. The Liberian specimen agrees well with his fifth stage, indicating a bird nearing fully adult plumage. *N. reichenbachii* does not have the dull eclipse plumage found in some sunbirds (Delacour 1944). The bird was sexed as male with testes not enlarged. All the above characters are in agreement with a diagnosis of an immature male Reichenbach's Sunbird.

The presence of an immature *N. reichenbachii* in Liberia in mid-September is consistent with our current knowledge of the breeding season for this species, which has been recorded in the Cameroon region in June (Chapin 1954: 217–8, Serle 1981) as well as from September to December (Serle 1981). In Liberia, for other nectarinids the Nimba laboratory recorded breeding most frequently in the May/June period (Colston & Curry-Lindahl 1986).

A note on the plumages of N. reichenbachii

A feature considered unique to the '*Anabathmus*' group is the presence of yellow pectoral tufts in both the male and female. Mackworth-Praed & Grant (1973) indicate that the tufts in the female Reichenbach's Sunbird are generally paler yellow. Hall & Moreau (1970) indicate that in the male the tufts are orange-yellow. In the AMNH series of 12 adult males and 8 adult females the coloration of pectoral tufts is spectrum yellow (55) in both sexes, although in the females these feathers are somwhat paler. There is, however, variability in this character in the males, reaching an extreme in an adult male from Bata in Equatorial Guinea (AMNH 800642) in which the pectoral tufts are bright orange-yellow (18). It is unlikely that this specimen from the centre of the range of the species represents a distinct race but the colour difference is quite strong.

In immature specimens of *reichenbachii*, such as the Liberian example, yellow feathers predominate on the throat and upper breast. Scattered among these are found glossy, blue-black feathers typical of the adult plumage, some completely in sheath as would be expected if the bird were undergoing its first prebasic moult. However, yellow feathers typical of the immature plumage are also found which contain varying amounts of the glossy blue-black pigmentation, presumably reflecting the irregularity of the physiology causing the transition to the adult plumage.

Acknowledgements

We would like to thank Alexander L. Peal, the Head of the Wildlife & National Parks Service of the Republic of Liberia's Forestry Development Authority for his cooperation and assistance during the course of this work. We are also indebted to Stuart Keith for his advice and helpful comments on the manuscript.

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The validity of *Kupeornis* Serle

by J. P. Vande weghe

Received 15 July 1987

According to Hall & Moreau (1970) the genus *Lioptilus* comprises 4 species. The type species is the Bush Blackcap *L. nigricapillus*, originally described in 1818 as *Turdus nigricapillus* Vieillot. It occurs in south-eastern Africa from Eastern Cape to Swaziland, where it inhabits montane forest and adjacent scrubby hillsides of the evergreen mistbelt (Maclean 1985). Following Sclater (1930) the name *Lioptilus* is pre-occupied and *Lioptilornis* Oberholzer, should be preferred. *Lioptilus* has,

however, currently been retained (Chapin 1953, White 1962, Hall & Moreau 1970).

In 1908 the Red-collared Blackcap *L. rufocinctus* Rothschild, was described from the Central African Highlands, where its distribution is restricted to Nyungwe Forest in southwestern Rwanda (Schouteden 1966) and to Itombwe Forest and Mount Kabobo in eastern Zaire (Verheyen 1947, Prigogine 1960a).

The third species is the White-throated Mountain Babbler *L. gilberti* Serle, originally described in 1949 as *Kupeornis gilberti* and subsequently merged into the genus *Lioptilus* by White (1962) and Hall & Moreau (1970). Its distribution is restricted to Mount Kupé, the Rumpi Hills, forest at Foto near Dschang and the Obudu Plateau in the Cameroon Highlands (Stuart & Jensen 1986).

The last species to have been discovered, in 1949 also, is Chapin's Flycatcher-babbler *L. chapini* Schouteden, also originally placed in the genus *Kupeornis,* but transferred to *Lioptilus* by Chapin (1953). It occurs in the Central African Highlands, where it inhabits montane forests West of Lake Albert, Lake Edward and Lake Kivu. The populations of Mount Nyombe and the Kahuzi-Biega area have been separated subspecifically from the nominate race as *nyombensis* (Prigogine 1960b) and those of western Itombwe as *kalindei* (Prigogine 1971). Mayr (1957) and White (1962) have included *chapini* in *rufocinctus*, but since *kalindei* and *rufocinctus* overlap (Prigogine 1971, 1980), *chapini* and *rufocinctus* have to be regarded as good species. Hall & Moreau (1970) consider *rufocinctus, chapini* and *gilberti* as allospecies of one superspecies, with *gilberti* as the most divergent member. About *nigricapillus* they expressed confidence that it is fairly closely related to *rufocinctus*, since both have "a narrow edging of black feathers round the eye, merging above the eye into the black of the crown". They suggest that *Parophasma gallinieri* from Ethiopia should also perhaps be included in the same genus *Lioptilus* but in this case preferred to wait for more information from comparative field studies. However, Wolters (1980) retains the name *Lioptilus* for *nigricapillus* only, and considers all the other 3 species belong to *Kupeornis*.

In fact the relation between these species is not easily understood, since most of them are very poorly known. The best known, *nigricapillus,* was initially considered a thrush, whereas until recently McLachlan & Liversidge (1978) considered it to be a bulbul, Pycnonotidae. On the other hand, *rufocinctus* was included in the Muscicapidae by Macworth-Pread & Grant (1955) and *chapini* still retains its very misleading English name "Flycatcher-babbler", as sometimes does *rufocinctus*. Indeed, very little has been written about the 3 tropical Central African species, and very few ornithologists have seen them alive.

According to Maclean (1985) the Bush Blackcap (*nigricapillus*) is usually a silent bird, but utters a "variety of bulbul-like notes in lively song in summer" and has a "fairly loud guttural *burgg* alarm note". According to Newman (1983) this song is quite similar to that of the Black-eyed Bulbul *Pycnonotus barbatus,* but more "liquid and varied". A good recording of the song of *nigricapillus* is given by Gillard (1985). This species lives solitarily, in pairs or small groups, and is quiet and unob-

trusive, creeping about in the middle layer of forest edge or low down in scrub. It has a direct, somewhat undulating flight. As mentioned above, it has been considered until recently to belong to the Pycnonotidae and its name in Afrikaans, Rooibek Tiptol, indicates a superficial resemblance with the genus *Pycnonotus*. Newman (1983) and Lockwood (*in* Maclean 1985) both depict this species in a very upright posture, typical for *Pycnonotus barbatus*.

The Red-collared Blackcap (*rufocinctus*) is a very different bird. It is common in Nyungwe Forest, where I have seen it frequently since 1972. It occurs between 1700 and 2700 m in moist montane forest, most frequently in dense forest stands, where it inhabits the mid stratum and upper canopy. In the higher altitudes of its altitudinal distribution it also visits more open valley forest, where it can be seen at lower levels of the vegetation. This species always occurs in flocks of up to 15 birds and is very obtrusive, continually uttering harsh chattering notes, not unlike those of *Turdoides* species, and often calling in chorus. It is not really shy, but is very active and continually moves around, never staying for long in the same place. It feeds almost exclusively among large masses of epiphytic mosses, ferns and orchids, often hanging with its head down, pecking and probing with some force. Its movements are very acrobatic and in some ways recall those of *Sitta* spp. The tail is constantly moved up and down. The species seems to be quite aggressive and interactions between individuals in the same group are frequent. The black crown feathers are often erected to form a short crest. During active display the tail is spread and erected vertically above the back. It sometimes associates with mixed-species bird parties, but most frequently with the White-headed Wood Hoopoe *Phoeniculus bollei,* which forages in a similar habitat. The flight of *rufocinctus* is identical to that of *Turdoides* species, with spread, drooping tail, alternating with periods of active fluttering and glides, but only over short distances. I could never locate a nest, but nest-building (April and May), mating (May, June and July) and feeding of recently fledged juveniles (June and August) occurs inside the flock, which seems to be much reduced in size at this time, however, and seldom exceeds 5–6 birds.

Of Chapin's Flycatcher-babbler (*chapini*) I have only very limited personal experience, but what I could hear and see of it on the western slopes of Mount Kahuzi in August 1984 was not different from *rufocinctus*, though the voice is somewhat higher pitched. The English name of this bird is clearly inappropriate, since it was never seen flycatching.

Of the White-throated Mountain Babbler (*gilberti*) I have no personal experience at all, but according to Stuart & Jensen (1986) its behaviour is very similar to that of *rufocinctus*. It inhabits tall mature montane forest, where it travels through the canopy and mid-stratum in noisy flocks of up to 12 birds. It is mainly insectivorous and feeds most of the time in mosses, epiphytes and bark crevices, often head-down in the manner of a nuthatch. The call is an explosive *chook*, usually a single note but occasionally up to 4 in rapid succession. A flock of birds will often make a harsh concerted chatter (Serle 1954, Stuart & Jensen 1986).

From these few notes it is apparent that the 3 Central African montane species are quite closely related. As far as *gilberti* is concerned, however,

Serle (1949) has already stated that it is not closely related to *nigricapillus*, and it is evident that *rufocinctus* and *chapini* are also very distant from this species. Consequently, the genus *Lioptilus* should contain one species only, *nigricapillus*. Up to this point the classification of Wolters (1980) seems to be right.

For the other 3 species, all canopy-frequenting, another generic name has to be given. These birds behave as typical babblers, and are probably quite closely related to the Capuchin Babbler *Phyllanthus atripennis*, a similarity which Verheyen (1947) stressed when he included *rufocinctus* in *Phyllanthus*. Serle (1949) also wrote that *gilberti* recalls the Capuchin Babbler in its actions, loud calls and close gregariousness. In their structure, type and pattern of coloration, as well as in some of their habits, these 3 species are closely similar, *gilberti* being perhaps intermediate between *rufocinctus* and *chapini* to the east and *atripennis* to the west. Possibly, all the latter 4 species could be merged in *Phyllanthus*. On the other hand the Capuchin Babbler *P. atripennis* is a heavier bird, living essentially in the understorey of the forest and climbing into the mid-stratum along tangled masses of creepers, never showing the acrobatic manoeuvres of the 3 canopy species, and in its foraging actions behaving more like a typical member of the genus *Turdoides*.

In the absence of more observations on display, vocalisations and breeding, the name *Kupeornis* Serle for *rufocinctus, chapini* and *gilberti* seems to be appropriate, an arrangement which is also followed by Wolters (1980). The first 2 species, inhabiting the Central African Highlands, have to be considered as allospecies of the same superspecies, while the last one, inhabiting the Cameroons, is probably more distantly related. All 3 species, however, are specialised canopy babblers, largely dependent on lush epiphytic growth and consequently restricted to some of the wettest montane forests of tropical Africa. The English generic name Mountain Babbler seems to be the most appropriate.

The last problem, in my opinion, is the systematic position of *Lioptilus nigricapillus*. If it could be proved that this species really belongs to the *Timaliidae,* then its position within this family should be examined again, since it is not clear that Wolters is right to place *Lioptilus* just after *Kupeornis*.

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The relationships of the African warblers *Apalis binotata* and *A. (b.) personata*

by M. P. S. Irwin

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The Masked Apalis *Apalis binotata* Reichenow is generally accepted as being divisible into 3 races, 2 of which are well marked. A lowland form, *A. b. binotata*, occurs confluently in forest, in Cameroon, northern Angola and from western Uganda to the base of Mt Elgon and to northwestern Tanzania. It is replaced by *A. b. personata* Sharpe in the highlands of eastern Zaïre, from west of Lake Edward on the Lendu Plateau south to Mt Kabobo, the Nyungwe Forest in Rwanda and in southwestern Uganda on the Rwenzori Range, the Impenetrable Forest and Kigesi. Another less well marked form nearest to *personata*, *A. b. marungensis* Chapin, occurs above 1800 m in the Marungu Highlands in southeast Zaïre.

Lowland *binotata* and montane *personata* (with *marungensis*) differ considerably in colour and pattern of the head (Fig. 1); otherwise they are rather alike. They are also known to replace one another abruptly and without intergradation where their ranges meet, and the highland form is larger. Despite this, they are treated as conspecific by Chapin (1953), Schouteden (1954), Mackworth-Praed & Grant (1955), White (1962), Hall & Moreau (1970), Britton *et al.* (1980), Wolters (1980) and Traylor *in* Mayr & Cottrell (1986).

Figure 1. Head patterns of female Mountain Masked Apalis *Apalis personata* Sharpe (right) and female Masked Apalis *Apalis binotata* Reichenow (left). Scale 1/1.

During a recent visit to the British Museum (Natural History), Tring, I studied the material of *binotata* and *personata*. Hall & Moreau (1970) treat *binotata* as being closely related to the Yellow-breasted Apalis *A. flavida* (Strickland) and forming a species group with Rudd's Apalis *A. ruddi* Grant. However, while *binotata* gives the immediate impression of being a heavily melanised forest representative of *flavida, personata* does not and is more distinct. Compared with *personata*, nominate *binotata* has the black on the throat and breast more restricted, extending less towards the belly, and the centre of the belly whiter, less washed with grey, while the undertail-coverts are yellow and all the rectrices have conspicuous yellow tips. The most distinctive feature however, is the difference in head pattern; in *binotata* there is a white line separating the black chin and throat from the sides of the face to the ear-coverts, where there is a posterior grey patch. In *personata* the forehead and crown are black (slate grey in *binotata*) like the sides of the face and there is a somewhat triangular white patch behind the ear-coverts, bordered posteriorly with yellow. The undertail-coverts are off-white like the belly and the yellowish tips to the tail are restricted to the outer rectrices and may be absent. This varied combination of plumage characters and particularly the different arrangement of the white head and throat patterns, gives the 2 forms a very different appearance. These are well illustrated by Schouteden (1954, Figs 221, 222) and shown here in Fig. 1. In study skins the legs and feet of *binotata* are a deep green colour, much darker than in *personata*. In West Africa Bannerman (1939) for *binotata* states flesh-coloured legs, and Friedmann & Williams (1969) for Uganda give dark grey-brown, which more closely approaches the colour in skins. Chapin (1953) gives the feet of *personata* as brownish pink, washed with greyish on the metatarsus; Jackson & Sclater (1938) give the legs of *binotata* as bright brown and *personata* as dark flesh. Eye and bill colour are alike or almost so.

There are also marked size differences, montane *personata* being larger (mm, mean in brackets): *binotata* (12 ♂♂, 8 ♀♀)—wing, ♂♂ 47–52 (49), ♀♀ 45–48 (46); tail, ♂♂ 38–45 (40), ♀♀ 33–37 (35); *personata* (9 ♂♂, 6 ♀♀)—wing, ♂♂ 55–58 (56), ♀♀ 53–56 (54); tail, ♂♂ 42–48 (46), ♀♀ 41–45 (43). The bill in *personata* is noticeably longer, 12.5–14.5 (13.1) mm against 12.0–13.5 (12.6) mm in *binotata*; the bill of *personata* is also somewhat broader, especially at the gape, and is flycatcher-like. Friedmann & Williams (1969) give the weight of *binotata* as 7–9 g, but no weights for *personata* appear to have been published.

No intermediates are known between *binotata* and *personata* where their respective ranges meet and they appear parapatric with altitudinal separation. Friedmann (1966) remarked that it was difficult to visualise the geographic ranges of the 2 forms in the area where they meet. Britton *et al.* (1980) provide the distribution of *binotata* as between 1200 and 1500 m in the Kibale and Malabingambo forests, with *personata* at 1500–2800 m in the Impenetrable Forest and on the Rwenzori Range. Chapin (1953) provides a clearer picture of altitudinal replacement; he obtained *personata* on west Ruwenzori (= Rwenzori) at 6000 ft (1800 m) at the headwaters of the Mpanga river just before it issues from the mountains, yet at 5000 ft (1525 m) along the same stream, in the Mpanga (= Kibale) Forest, it is replaced by *binotata*, which was very common there. This observation is qualified by the remark that the country in-between is open and grassy, but it seems unlikely that this would constitute a barrier.

There seems no good reason for continuing to regard *binotata* and *personata* as conspecific and they must be considered to have diverged sufficiently to be treated as full species, replacing one another where their ranges adjoin. The differences separating them are greater than would normally be expected between conspecifics. Even if they were not in contact there would still be ample grounds for regarding them as full species purely on morphological differences.

Specimens of the race *marungensis* from the Marungu Plateau were not available for examination, but as it possesses the same head pattern as *personata* it is clearly a race of that species. It differs from nominate *personata* principally by having the sides of the breast greener (Dowsett & Prigogine 1974), more greyish-black on the sides of the face and the black on the foreneck bordered with grey; it is also long-winged, 53–57.5 mm (Chapin 1953).

Some discussion of possible isolating mechanisms within this group is appropriate. Lewis (1982a) has described the threat display of the closely related *A. flavida* where the prominent white throat patch is shown off. The throat patch is also considered to be of importance in recognition between individuals and is used during semi-automatic display while duetting. A strong pair-bond is also maintained throughout the year (Lewis 1982b). *A. personata* is also known to duet (Kunkel 1974) and *binotata* will almost certainly be found to do so. Facial and threat patterns are apparently important in species recognition in *Apalis*. The face-patterns that distinguish *binotata* from *personata* would almost certainly be sufficient to act as specific isolating mechanisms. Behaviourally all the members of this species group are likely to be very similar and the early establishment and maintenance of a permanent pair-bond would reinforce any isolation between populations.

It is also evident from the close similarity between *binotata* and *flavida* that they are descended from an immediate common ancestor and can be regarded as members of a superspecies. However, as *personata* shares fewer characters, is more distant and therefore derived, it cannot bear a similar relationship to *flavida,* though all 3 are phyletically close and have a shared common ancestry. As they do not bear an equal relationship to *flavida,* it is inconsistent to treat *binotata* and *personata* as forming a superspecies, or to go as far as to include all 3 in this category. On present

evidence, *personata* may have diverged earlier from *flavida* stock and before *binotata* became differentiated. The heavy melanisation of the plumage in the 2 species may have occurred independently in response to adaptation from a savanna to a forest environment and as different chronological events.

In my view *A. binotata* is a monotypic species of lowland forest, quite closely related to the widespread and highly polytypic *A. flavida* of savanna; but the more distinct, highland, *A. personata*, is a separate species with 2 races, *A. p. personata* Sharpe and *A. p. marungensis* Chapin.

It is hoped that as a result of this paper more attention will be paid to these 2 species where their ranges adjoin. D. A. Turner (*in litt.*) informs me that *personata* in the Nyungwe Forest will immediately respond to a play-back of a recording of *binotata* from the Mpanga Forest. However, as the calls of closely related *Apalis* species tend to be very similar, too much weight need not be put on this and differences in facial patterns may prove to be more fundamental.

As the common name of the Masked Apalis is now applicable to 2 species, it would seem appropriate to restrict its use to *A. binotata* and that the name Mountain Masked Apalis be used for *A. personata*.

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A previously undescribed African race of the Stonechat *Saxicola torquata*

by P. A. Clancey

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The subspecies of the Stonechat *Saxicola torquata* (Linnaeus) occurring in the southern third of Africa were last reviewed in Clancey (1961), when the populations breeding in the eastern highlands of Zimbabwe and in adjacent Mozambique were associated with *S. t. oreobates* Clancey, 1956: 40 miles E. of Maseru, Lesotho, at 2440 m a.s.l. On the receipt of better material this assignment was found to be incorrect, the Zimbabwean montane birds being both much shorter winged and less saturated than those of the Lesotho highlands, and in Clancey (1968) they were associated with the equally short-winged *S. t. promiscua* Hartert, 1922: Uluguru Mtns, eastern Tanzania. In Mackworth-Praed & Grant (1955) the range of *promiscua* is restricted to certain eastern highlands of Tanzania, which view is also that of Ripley (1964) and Britton *et al.* (1980), the latter giving the established range of *promiscua* as "Mpwapwa and Kilosa to the Mikumi National Park, the foothills of the Ulugurus and northern Iringa" at 500–1600 m a.s.l. A re-examination of the case shows that the eastern Zimbabwean and adjacent Mozambique montane populations differ from *promiscua* in that the male has the rufous of the venter extended down over the sides of the body to the flanks in breeding dress—the lower sides and flanks in *promiscua* being white as in *S. t. axillaris* (Shelley), 1882: Mt Kilimanjaro, northeastern Tanzania—while the female is light vinaceous-buff without a contrasting darker breast. Such elements are in effect closer to *S. t. stonei* Bowen, 1931: Vila General Machado, Bié, Angola, than they are to East and South African forms, but also differ from *stonei* sufficiently to bear a name of their own:

Saxicola torquata altivaga, subsp. nov.

Type. ♂, adult. Banti Forest Reserve, S. of Mutare, Zimbabwe, at 19°20'S, 32°46'E, alt. 1750 m, 30 June 1973. Collected by Durban Natural History Museum personnel. In the collection of the Durban Museum, D.M. Reg. No. 28 942.

Adult male similar to that of *S. t. stonei* described from the central highlands of Angola, but differs by having the belly, crissum and under tail-coverts white and not light buff. Female also much as in *stonei,* but generally paler over the fore-throat and belly. Size smaller: mean of ♂ wing 67.2 *v.* 71.0 in *stonei,* ♀ wing 65.6 *v.* 68.8 mm.

Differs from races from still further south in Africa (*S. t. oreobates, S. t. torquata* and *S. t. clanceyi* Courtenay-Latimer, 1961: Wallekraal, Little Namaqualand) in its much smaller size and a range of distinguishing colour characters. In *S. t. oreobates* ♂ wing mean is 75.5, in ♀ is 71.2 mm.

Similar in size to *S. t. promiscua*, but male with ventral rufous extended laterally to the flanks, and female without a dark breast-band.

Measurements. Wings of 21 ♂♂, 66–69 (67.2), SD 1.36, tails 45–50 (47.6), SD 1.59; wings of 6 ♀♀, 64–66 (65.6), SD 0.40, tails 45–47 (46.0), SD 0.70.

In the case of *S. t. stonei* ♂♂, wings (of 12), 70–73 (71.0), SD 1.07, tails (of 8), 50–54 (51.0), SD 1.56; ♀♀ wings (of 11), 67.5–70 (68.8), SD 0.78, tails (of 8) 48.5–51.5 (50.0), SD 1.08 mm.

Material (paratypical). 27 (eastern highlands of Zimbabwe; Mt Gorongosa, Mozambique; northern Transvaal).

Range. The southern highlands of Malawi and adjacent northern Mozambique, and south of the Zambezi R. in the eastern frontier highlands of Zimbabwe from Inyanga to the Chimanimani Range and the Melsetter district, and south of the Limpopo R. in the northern highlands of the Transvaal (to Woodbush, Tzaneen). Also Mt Gorongosa in southern Mozambique.

Measurements of the Type. Wing (flattened) 66, tail 46+ mm.

Etymology. *Altivaga*, Latin, a roamer of the montane heights.

Remarks. With the restriction of the range of *S. t. promiscua* to eastern Tanzania, and the separation of the montane breeding populations resident from southern Malawi to eastern Zimbabwe, adjacent Mozambique and the northern Transvaal as a new race (*S. t. altivaga*), the status of *promiscua* is materially altered. It requires to be seen as a reasonably stable localized intermediate or linking form between the southern subspecies complex in which males have the ventral white largely restricted to the mid-venter, crissum and under tail-coverts, and east and northeastern African elements, the males of which are much more extensively white below. Examples resembling typical *promiscua* crop up in populations far to the west of its established range in Angola and adjacent western Zaïre, where the ranges of *S. t. stonei* and *S. t. salax* (Verreaux & Verreaux), 1851: Gabon, converge (M. A. Traylor *in litt.* to Clancey 1961). It is significant in this regard to note that *S. t. promiscua, S. t. altivaga* and *S. t. salax* are small-sized forms, replaced to the south and northeast by longer winged taxa. In the case of *S. t. axillaris,* with which *S. t. promiscua* is juxtaposed, wings in ♂♂ measure 70–76 (72.5), SD 2.31 in 7 specimens. In *S. t. salax* 4 ♂♂ measure 65–66 (65.3), 2 ♀♀ 65, 66 mm, being thus much smaller than *S. t. stonei*.

There is no evidence that *S. t. altivaga* is subject to post-breeding movement on any scale, but *S. t. stonei,* which replaces it at lower elevations and in drier country to the west, is an established local migrant, individuals ranging to the eastern and southeastern lowlands during the southern winter (see Clancey 1961). Two specimens from Mt Selinda, at the southern extremity of the eastern frontier highlands of Zimbabwe, in the collection of the Durban Natural History Museum taken in early June, 1973, are clearly *stonei,* the ♂ with a wing of 71 and tail of 50.5, the ♀ with a wing of 70 and tail of 50+ mm. They are evidently migrants, as other Mt Selinda specimens to hand are *altivaga*.

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A new subspecies of Arabian Warbler *Sylvia leucomelaena* from Israel

by Hadoram Shirihai

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During research on *Sylvia* warblers, a special study of the Arabian Warbler *Sylvia leucomelaena* was made in the field and by ringing in the Arava Valley, Israel, and by comparative examination of skins from Israel and those in the collection at the British Museum (Natural History) (BMNH).

The Arabian Warbler, also known as Blanford's Warbler or Red Sea Warbler, was originally described by Hemprich & Ehrenberg (1833) and placed in the genus *Curruca*. Hartert (1917) placed it in *Parisoma*, and Meinertzhagen (1949) and all following authors placed it in the genus *Sylvia*. Afik (1984) doubted that it was a Sylvid warbler since its biological and some morphological characteristics differ from other members of the genus *Sylvia*. I believe that the Arabian Warbler is a species intermediate between the 2 genera *Parisoma* and *Sylvia*, but closer to the latter, where it is best left, at least at present.

The Arabian Warbler occurs on both sides of the Red Sea—in Arabia, Somalia and Sudan (Harrison 1982, Jennings 1981, Hall & Moreau 1970, Archer & Godman 1961)—in dry subtropical desert or semidesert, favouring acacia trees or large bushes near acacia trees.

There are 3 distinct subspecies, all rather similar:—

S.l. leucomelaena (Hemprich & Ehrenberg 1833). Distributed in southern and western Arabia north to 26°N, also possibly in Somalia. It is the darkest and largest of the 3 races (Table 1). Hartert (1917) described the birds collected in South Yemen as "*distincta*", but it is now considered that all birds found in the Arabian peninsula are *S.l. leucomelaena*. This population is the one nearest to Israel.

S.l. blanfordi (Seebohm 1878). Distributed along the western Red Sea border from Sudan to Eritrea. Upperparts sandier greyish-brown, head very dark brown with a sharp division from the paler mantle, a contrast which is lacking in *leucomelaena* and *somaliensis*. The wing in *blanfordi* is the smallest, though there is still overlap with both *leucomelaena* and *somaliensis* (Table 1).

TABLE 1
Mensural data on the subspecies of *Sylvia leucomelaena*

		S.l. leucomelaena—Arabia and Yemen n	Range	Av.	SD	*S.l. blanfordi*—Sudan n	Range	Av.	SD
wing	♂♂	10	67.5–76.0	71.20	3.11	13	65.0–70.0	67.53	1.79
	♀♀	11	67.0–72.0	68.36	2.33	10	65.0–67.0	65.80	0.78
tail	♂♂	12	64.0–73.0	68.50	2.60	12	59.0–67.0	64.66	2.18
	♀♀	10	60.0–68.0	65.60	2.36	8	56.0–63.0	61.12	2.29
w/t ratio	♂♂	10	100.1–107.0	103.35	2.86	13	100.0–110.1	103.82	3.12
	♀♀	10	100.0–111.6	104.44	3.76	8	104.8–117.8	107.85	4.12
bill-s	♂♂	10	12.0–16.1	14.92	1.66	11	11.5–16.7	14.73	1.84
	♀♀	9	14.0–16.7	16.16	0.98	9	12.0–16.6	14.96	1.59
bill-w	♂♂	5	3.9–4.9	4.68	0.43	5	4.2–4.8	4.42	0.22
	♀♀	5	3.9–4.9	4.38	0.43	6	3.8–4.5	4.26	2.27
tarsus	♂♂	12	20.5–23.0	21.60	0.81	13	20.0–23.4	21.90	1.24
	♀♀	10	20.3–24.5	21.59	1.40	10	20.5–24.0	22.20	1.19

		S.l. somaliensis—Somalia n	Range	Av.	SD	*S.l. negevensis*—Israel n	Range	Av.	SD
wing	♂♂	6	63.0–72.0	68.16	3.92	11	71.0–75.0	72.45	1.33
	♀♀	6	65.0–68.0	66.50	1.37	9	67.0–72.0	69.61	1.83
tail	♂♂	6	54.0–67.0	60.33	4.13	11	67.0–72.0	69.81	1.77
	♀♀	6	56.0–64.0	60.66	2.87	9	62.0–72.0	66.11	3.58
w/t ratio	♂♂	6	106.6–112.9	110.25	2.64	11	100.0–105.8	102.89	2.19
	♀♀	6	106.2–116.0	109.68	3.43	9	101.4–112.9	106.10	4.23
bill-s	♂♂	5	13.0–17.2	15.58	19.30	9	15.4–17.1	15.97	0.56
	♀♀	6	14.0–17.9	16.50	14.40	8	15.3–18.0	16.45	0.90
bill-w	♂♂	5	3.7–4.6	4.24	0.35	10	4.9–5.8	5.33	0.33
	♀♀	6	3.8–4.5	4.20	0.43	7	4.2–5.6	5.08	0.33
tarsus	♂♂	6	20.0–23.5	21.83	1.21	11	20.2–24.8	21.88	1.23
	♀♀	6	21.0–23.6	22.20	1.11	7	20.3–22.6	21.31	0.76

S.l. somaliensis (Sclater & Mackworth-Praed 1918). Found only in Somalia. Its upperparts coloration and its measurements are intermediate between *leucomelaena* and *blanfordi*, closest to *leucomelaena*.

The Arabian Warbler in Israel

In the 1960s the Arabian Warbler was discovered breeding in the Arava Valley, Israel (Zehavi & Dudai 1974, Inbar 1975), at the northernmost limit of its range. Within Israel, it is found from 15 km north of Eilat along the Arava Valley to the south of the Dead Sea, and in particular at Hatzeva, the Shizhaf Reserve and Yotvata. It is resident, but first-winter birds disperse to Eilat and East Sinai.

Madge & Parr (1981) considered the Israeli race to be *S.l. blanfordi* in comparison in the field with individuals they had seen in Yemen. I have been able to compare in detail several hundred birds, including 40 caught in Israel, with skins taken at similar times of year and of similar age groups amongst specimens at the BMNH and find definite consistent differences between Israeli birds and *blanfordi*. The Israel birds are an isolated population and at least as distinctive as the other 3 races, with a greater difference between the Israeli birds and the nominate race than there is between

the nominate race and *somaliensis*. They should be regarded as a separate race which I would name.

Sylvia leucomelaena negevensis subsp.nov.

Holotype. Adult male; Hatzeva, 150 km north of Bay of Aqaba/Eilat, Israel. Collected by H. Shirihai 26 September 1986. Lodged in the British Museum (Natural History), Tring, BM No. 1987–20–1.

Measurement of type. Wing 73.0 mm, tail 72.0 mm, bill from base of skull 16.8 mm, tarsus 24.0 mm.

Description of holotype

Upperparts: mantle, scapulars, back, rump, and uppertail-coverts light grey with a slight brownish tone. The cap is black, gradually shading into light grey on the back, with no sharp boundary between cap and mantle. Wing coverts greyish-brown with pale grey fringes; remiges blackish-brown. Orbital ring black. The eye-ring contains both black and white feathers, forming an incomplete white eye-ring.

Underparts: throat and chin white, sides of body, under-tail coverts and belly white with a slight greyish tone, causing the clean white of the throat to stand out.

Tail: black, the outermost 3 retrices with white tips, the outermost having also white outer web edges.

Soft parts: Iris dark brown with pale greenish or whitish dots. Legs dark grey or dark bluish-grey, bill longer and wider than in the other races, mainly blackish with paler, bluish-grey base to lower mandible.

Material examined. 23 *leucomelaena* at BMNH from Yemen and Saudi Arabia; 23 *blanfordi* at BMNH from the Sudan; 12 *somaliensis* at BMNH from Somalia; 20 from Israel—3 in the Zoological Museum of the University of Tel Aviv, and 17 from the author's private collection, all of them collected in the Arava Valley in Israel between the Gulf of Aqaba/Eilat and the southern Dead Sea.

The comparisons were based on differences of plumage coloration and tail pattern, and measurements were taken of wing, tail, bill from skull, tarsus and bill width (from the back edge of the nostril). The comparisons were undertaken on skins of the same age and sex, which had been collected at the same time of year.

Measurements (Table 1). *S.l. negevensis* is largest of the subspecies, but there is considerable overlap. Its wing/tail ratio is smaller due to its longer tail.

Notes

S.l. negevensis differs from typical nominate *leucomelaena* in a less brown cap and the upperparts less brownish, more grey, and is paler and greyer even than *blanfordi*; the head is a blacker-brown than the latter's, but without the sharp boundary between the blackish-brown head and the greyer mantle. The blackish-brown head of *negevensis* contrasts

sharply with the white throat, and the general head pattern recalls that of an adult male Sardinian Warbler *S. melanocephala*. The wings are brown, contrasting with paler upperparts. The white eye-ring varies in completeness. The female is similar to the male, but browner, the eye-ring less prominent and always broken. The juvenile is like the adult female but the nape and crown are greyer, contrasting with darkish ear-coverts; there is no eye-ring, and a whitish area above the lores is age distinctive; the wing coverts have distinctive rusty fringes; tail without obvious white tips to outer feathers, merely a pale fringe to tip of the outermost.

Sexual dimorphism appears to be more marked in *negevensis* than in the other 3 subspecies. Most comparisons were made between *negevensis* and the nominate, which it most resembles. Adult females of *negevensis* in fresh plumage show more brownish tones to the back, mantle and scapulars than do males of the same subspecies, which are cleaner grey. The females have a brownish rather than blackish cap. Fresh plumages of the nominate, on the other hand, showed only very slight differences, if any between the sexes. In Arava Valley, Israel, it was relatively easy to differentiate between the sexes in *negevensis* even in the field.

It is necessary to emphasize the importance, at least in *S. leucomelaena*, of conducting comparisons only with birds of the same age, since, for example, third-winter females of *negevensis* attain a more greyish tone in the upperparts and thus resemble first-winter males.

The size difference in males and females of *negevensis* is small, and is similar in degree to that in the other 3 subspecies (Table 1).

Acknowledgements

First of all I want to thank the staff of the British Museum (Natural History), especially Peter Colston, but also Graham Cowles and Michael Walters. I would like to thank the staff of the Zoological Museum at Tel Aviv University for giving me access to their skin collection. I should also like to thank Ms F. E. Warr, Mrs Mikhal Ben-Shaprut and Mrs Doreen Levy for help with editing, typing and translating. I thank also the International Birdwatching Centre, Eilat, for sponsoring me in the field and to all the people involved in the *Sylvia* project for their comments on this paper: Per Alstrom, Peter Grant, Tim Sharrock and Lars Svenson. My thanks also to my 2 partners in the Sylvia Project Team, the field photographer David Cottridge and the artist Alan Harris, who both helped collect information. Finally my thanks to Dr J. F. Monk for his valuable comments on the original submission of this paper.

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A new subspecies of *Pytilia melba* from Djibouti, East Africa

by G. R. Welch & Hilary J. Welch

Received 12 August 1987

During the course of the Djibouti II Autumn '85 Expedition, 4 days were spent in the Mabla mountains, 25 km west of Obock, primarily searching for the endemic Djibouti Francolin *Francolinus ochropectus*, but also surveying all the birdlife of this previously undocumented region.

On 17 November, in the region of the village of Goula (11°57′N, 43°00′E), 4 birds were encountered which resembled Green-winged Pytilia *Pytilia melba* but differed in several plumage characters. Photographs of a male were obtained the following day, along with additional notes on plumage, voice and habitat. On 23 November at least 8 birds resembling those observed on Mabla were found in Tôha (11°47′N, 42°43′E), a large wadi on the southern edge of the Forêt du Day, with an additional 3 birds at the junction of the Randa–Bankoualé road (11°50′N, 42°42′E) on 24 November. In both cases more photographs of males were obtained.

Following the expedition's return to Britain, these photographs were compared with skins of *P. melba* in the British Museum (Natural History), Tring (BMNH) and copies of the description of the Djibouti birds sent for comment to Derek Goodwin and Jurgen Nicolai, both of whom are well acquainted with the genus. From these researches, it would appear that the birds in Djibouti constitute a new subspecies of *P. melba* and a detailed description has been published in the Djibouti II Report (Welch *et al.* 1986: 111–118) and photographs of the holotype and paratypes are lodged in the Photographic Library of the BMNH—reference nos PL2001.1, 2002.1, 2003.1 and 2003.2. There we have proposed the name

Pytilia melba flavicaudata subsp.nov.

It differs from all other races of *P. melba* (see Appendix) in totally lacking red in the plumage; the face, rump and tail of males are all a bright golden yellow. In all other respects the birds resemble *P. m. jessei*, the race which occurs in neighbouring Ethiopia. To date there is no biometric data available on this subspecies, but it appears likely that it has arisen as the result of a yellow morph becoming genetically fixed in the population.

In 1985 all the birds were found in the same type of habitat—mixed *Acacia mellifera/Rhigozum somalense* 'scrub', with numerous taller *Acacia seyal*, and it appeared that the birds were dependent on this species mixture. However, in March 1987 a brief return visit was made to Tôha and at least 2 *P. m. flavicaudata* were seen in a different section of the wadi. On this occasion they were frequenting gardens in the region of the native-style tourist village at Dittilou (11°47'N, 42°42'E) and the neighbouring side wadi. Although both *A. mellifera* and *R. somalense* were present in the general area, neither appeared to be of particular importance to the birds.

It is interesting to note that the 2 regions where *flavicaudata* occurs are also those areas where the endemic *F. ochropectus* is also found. It is therefore possible that the 2 species became isolated from their nearest relatives at the same time and have evolved side by side. Until biometric data and, more importantly, behavioural information is available for *flavicaudata*, its taxonomic origin and status must remain unconfirmed.

Acknowledgements

Djibouti II was GRW's sabbatical project for the Royal Society for the Protection of Birds, who also helped sponsor the expedition. Other sponsorship was provided by the Fauna and Flora Preservation Society, the International Union for Conservation of Nature and Natural Resources, the Ornithological Society of the Middle East, the Worldwide Fund for Nature and the World Pheasant Association. Work in Djibouti was authorised by the Institut Supérieur d'Etudes et de Recherches Scientifiques et Techniques and 4-wheel drive transport was provided by Ets Marill. Stephanie Coghlan assisted in the field during this phase of the work. To all we extend out grateful thanks.

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APPENDIX

Description of the Holotype (Welch *et al*. 1986: 114)

Although no specimens were collected, a series of 4 photographs of 3 different males was obtained and these are registered at the BMNH Photographic Library, reference no. PL2001.1. Photographed near Goula, Djibouti (11°57'N, 43°00'E) at 565 m, 17 November 1985, by G. R. & H. J. Welch.

Crown, nape, rear half of ear coverts, hindneck, mantle and lores grey, the grey on the mantle gradually shading into the dull greeny-brown of the scapulars, back and wings. Forehead, chin, throat, frontal half of ear coverts, sides of neck and upper breast bright golden yellow. Lower breast, belly and vent white. Underparts marked with fine black barring from the upper breast to lower belly, the barring becoming coarser and broader on the lower belly and flanks but absent from vent. Tail rich golden yellow, only slightly duller than face. Greenish central tail feathers and very bright yellow outer tail feathers. Bill pinkish with grey culmen, legs pink, iris deep red.

Female (not photographed), similar to the male but with the yellow of the face and upper breast replaced by pale grey, the tail slightly duller yellow and the wings a brighter shade of green.

Paratypes (photographs only): male, Tôha (*c.* 500 m a.s.l.), BMNH reference no. PL2002.1; male Bankoualé junction on the Tadjoura to Randa road (*c.* 700 m a.s.l.), PL2003.1.

As a subspecies of Green-winged Pytilia, the common English name of Djibouti Green-winged Pytilia is suggested. However, should these birds be found to constitute a new species, the name Yellow-tailed Pytilia would be more appropriate.

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Notiochelidon flavipes; a swallow new to Venezuela

by Miguel Lentino R.

Received 12 August 1987

Although most species of swallows are widely distributed, several only occur in rather restricted habitats. The Pale-footed Swallow *Notiochelidon flavipes* inhabits a narrow altitudinal fringe in the cloud forests of the Andes (Parker *et al.* 1980) and has been reported from the Cauca Valley in Colombia south to Peru and northern Bolivia (Meyer de Schauensee 1982, Parker & O'Neill 1980, Parker *et al.* 1980, Parker & Rowlett 1984, Parker *et al.* 1985). In this note I present the first sightings and collection of the Pale-footed Swallow in Venezuela, records which considerably extend the northern limits of its range.

The species was originally recorded in August 1985 in the city of Merida, State of Merida, by K. Kauffmann, C. Parrish and A. Altman, bird-watchers who identified it by its song, flight pattern and coloration. Between 23 and 28 December of the same year in Betania, Páramo de Tamá, State Táchira (07°26′N, 72°25′W) I observed several groups of 10–15 individuals of *N. flavipes* foraging over man-made clearings within the cloud forest. At times they were seen together with *N. murina*. One specimen of *N. flavipes* was collected and is currently deposited in the Colección Ornitológica Phelps, Caracas (label number 75731). The specimen is an immature male. Its testes were only slightly developed (1.5 × 0.5 mm), the cranium was not completely ossified, the bill was black with yellow gape, the iris was brown, and the feet, tarsi and mouth lining were pinkish-flesh. Body weight was 7.4 gm. The plumage, which seemed to be fresh, was in good condition. Coloration was similar to that described by Chapman (1922), Meyer de Schauensee (1946) and Zimmer (1955), except that the under tail coverts had pale (or white) clear edges. This characteristic is also present in juveniles of *N. murina meridensis* (3 specimens examined), nominate *N. cyanoleuca* (11), *Atticora melanoleuca* (4) and *A. fasciata* (7). Parker & O'Neill (1980) correctly point out that *N. flavipes* is easily confused with *N. cyanoleuca,* which is a possible reason why it might have been overlooked previously in Venezuela.

Ectoparasites were collected on 2 specimens of *N. murina* and on the specimen of *N. flavipes,* and were identified as *Craterina seguyi* (Hippoboscidae), a species already reported as a parasite of *Notiochelidon,* though its presence was known in Venezuela from only a few specimens collected from an unspecified swallow's nest in the state of Merida (R. Guerrero).

Acknowledgements

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Notes and comments on the taxonomy of Jouanin's Petrel *Bulweria fallax* and Bulwer's Petrel *Bulweria bulwerii*

by B. Zonfrillo

Received 29 August 1987

Recent speculation on the little known Jouanin's Petrel *Bulweria fallax* by Olson (1985) and Bourne (1987) has put in question the taxonomic status of this and Bulwer's Petrel *Bulweria bulwerii,* and has highlighted the dearth of detail on both species. Details of 2 specimens of *B. fallax* held in the Royal Museum of Scotland (RMS), Edinburgh, together with other published biometrics are here presented along with data on 109 *B. bulwerii* caught alive on islands of the Madeiran Archipelago, Portugal. Birds were mist-netted for ringing and comprised 86 breeding adults in

TABLE 1

Biometrics (mm) of 109 living adult *Bulweria bulwerii* from the Maderian Islands and 5 specimens of *B. fallax*

Bulweria bulwerii (n = 109)

	Wing	*Culmen*	*Tarsus*
Range	183–212	18.5–25.5	24.0–32.0
Mean	200.9	21.1	27.0
S.D.	4.7	1.0	1.3

Bulweria fallax (n = 5)

	Wing	*Culmen*	*Tarsus*	*Locality*	*Reference*
Ad ♀	246	29.0	33.0	Indian Ocean	Jouanin 1955, type
Ad	232	30.5	29.5	Treviso, Italy	Olson 1985, mount
*Juv	237	26.5	31.2	Thamarit, Dhofar	RMS skin, downy
*Juv ♂	239	27.5	31.5	Thamarit, Dhofar	RMS, skin
Ad ♂	240	29.0	32.0	Malindi, Kenya	Cunningham-van Someren 1987, skin
Means	238.8	28.5	31.4		

*measured personally, Royal Museum of Scotland

autumn (August and September) and 23 pre-breeding adults in May. In addition 10 downy chicks were examined, about 5 of which were close to fledging.

Olson (1985) describes the bicoloured feet noticed on a 30-year-old mounted specimen of *B. fallax* from Italy, and argues that since no other case of bicoloured feet has been reported, the bird in question might represent a new race of this species. While few *B. fallax* have been described in detail, Jouanin (1955), describing the type specimen, states "*Pattes de couleur chair passant graduellement au noiratre dans les parties distales et externes*". The foot colour of *B. bulwerii* varies widely from an overall greyish flesh to an overall bright pink, most birds falling somewhere in between these extremes, with greyish flesh feet and some degree of pink between the toes. Of 23 adults examined on Deserta Grande in May, 4 had distinctly bicoloured feet. It would not be surprising if adult *B. fallax* showed a similar variation in foot colour to that of *B. bulwerii*, and such a variable feature is unimpressive as indicative of a distinct race. The feet of juvenile *B. bulwerii* are an overall grey while juvenile *B. fallax* are greyish flesh.

Both Bourne (1987) and Olson (1985) comment on the size difference between the 2 species, although neither furnish any data in support of their opposing contentions. While few specimens of *B. fallax* have been measured, comparison of 5 of them with 109 *B. bulwerii* (Table 1, Fig. 1) shows that the 2 species can be distinguished readily by wing or culmen length. (*Post mortem* shrinkage of museum specimens will, in this instance, narrow the actual means shown.) Because of the great disparity in sample sizes, standard *t* tests for the comparison of means are not appropriate,

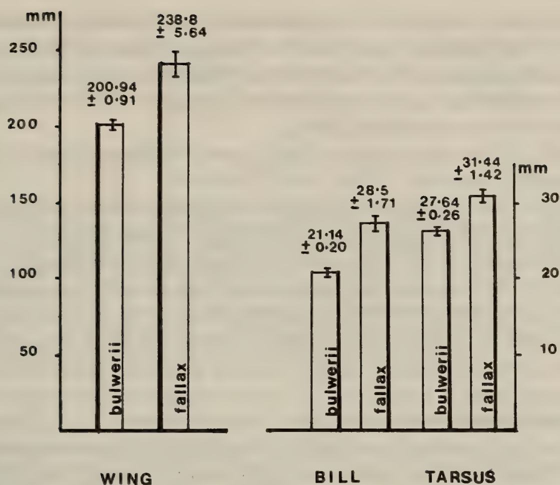

Fig. 1. Mensural comparisons between *Bulweria fallax* (n = 5) and *B. bulwerii* (n = 109).

but the data shown, in Fig. 1 as bar graphs, give the mean of each dimension with 95% Confidence Intervals. In no case is there overlap between the upper limit of one species and the lower limit of the other and a significant difference in size between the populations can therefore be accepted. For all 3 measurements, *B. fallax* is larger than *B. bulwerii*.

Apart from consistent differences in size, another distinguishing feature, which reinforces the specific status of both petrels, is found in the fledgelings. One of the 2 specimens of *B. fallax* collected by Walker (1981), is a newly fledged, still downy juvenile. This bird shows the upperwing evenly sepia in colour. Juvenile *B. bulwerii*, at the same stage of development, from the islands off Porto Santo, Madeira, showed the secondary coverts to be distinctly edged silvery grey, forming an obvious wing bar.

Breeding grounds of *B. fallax* are as yet undiscovered, but the species inhabits the sub-tropical Indian Ocean at latitudes roughly corresponding the those of *B. bulwerii* in the Atlantic Ocean, 15°N–20°N. Fledgelings of *B. fallax* picked up inland in Oman by Walker (1981) and Gallagher *et al.* (1984) show the fledging period to be in November and December. In the Madeiran islands, towards the northern part of its breeding range, *B. bulwerii* fledges from early September to late October. This apparent difference in breeding season may or may not be significant.

Feather lice (Mallophaga), frequently exhibit a high degree of host specificity, which in turn reflects the isolation and distinctness of the host. Mallophaga, being flightless, live and reproduce entirely upon the plumage of the living bird. Transfer, under natural circumstances, is only by physical contact from adult to adult and parent to offspring. The genus *Halipeurus* is found infesting virtually all species of North Atlantic

Procellariiformes, with the exception of the Fulmar *Fulmarus glacialis* (pers. obs. 21 sp./subsp. examined). Timmermann (1960) describes the *Halipeurus* lice infesting both species of *Bulweria,* that on *B. fallax* being *H. fallacis,* while that on *B. bulwerii* is *H. bulweriae.* Both species of lice are unique to their respective hosts.

In the light of the above data there seems little reason for not treating *B. fallax* as a full species.

The circumstances concerning the collection of the 2 specimens of *B. fallax* held in the RMS are worth recalling. These birds were found well inland at Thamarit (17°39'N, 54°02'E), Dhofar, Oman on 5 December 1978. Walker (1981) reported the finding but, *in litt,* has expanded on the brief details published: "A small party of black birds were reported to me by the Fire Chief in the vicinity of the Tower (ATC). I investigated, and collected two dead birds, one live one, and was told the Omanis had taken another two or three for the pot. The live bird was taken to Salalah, sixty odd miles south and released in the Indian Ocean. . . ." The birds were picked up during routine sweeps of the airfield, made to remove hazards to aircraft. There was no locally strong wind or poor weather to explain their occurrence but Walker noted that on a calm misty moonlit night the vast airfield at Thamarit could resemble a large area of water.

While one of the 2 *B. fallax* is an obvious juvenile, having a thick mat of ventral down still adhering, the other, originally described as adult, is also juvenile, its plumage evenly coloured and unworn, with no wing bar, and the longest primary pointed, similar to that of the downy bird. X-ray of the skull gave a picture similar to that of the downy bird. Adult petrels in general usually show wear or moult of wing feathers in the later stages of breeding, and this is true of *B. bulwerii.* In addition, the bills of both the *B. fallax* specimens are somewhat waxy in texture, similar to bills of newly fledged *B. bulwerii*, recognisably different from the more polished black of adults. Gale driven Manx Shearwaters *Puffinus puffinus* showing similar areas of ventral down to that of the fledgeling *B. fallax* have been found well inland in Scotland, possibly attracted by city lights, and up to 150 km from the nearest known colony (pers. obs.). The finding of a downy, newly fledged, Procellariiform specimen inland is therefore not necessarily indicative of a local breeding colony nor is such a bird likely to have been transported and abandoned inland by local inhabitants. Perhaps significantly, when released in daylight, *B. bulwerii* shows a distinct reluctance to fly, seeking cover by shuffling along with the aid of bill and wings or merely lying motionless, head held near the ground.

The undiscovered breeding grounds of *B. fallax* may well be found on offshore islands of Oman or the Arabian Gulf. On the other hand, if the species does breed inland then the high coastal mountain tops near Mirbat (1983 m a.s.l.) and some 90 km from Thamarit, may prove suitable. Here, locally strong offshore winds during the fledging period, November and December, could carry small groups of newly fledged young, and perhaps also adults, far inland where calm conditions and bright lights, such as at the Thamarit airfield, would attract them. With gale force southeasterly tail winds, birds could even be driven further onwards towards the Mediterranean Sea. The 3 birds found at Terviso, Italy in November 1953 may have arrived under such circumstances. Inland breeding of *B.*

bulwerii, on the other hand, is unrecorded, this species preferring to stay within sight and sound of the sea, sometimes barely above high water mark. A concerted effort should be made to locate the breeding grounds of *B. fallax*, the species being worthy of much further study and conservation.

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Notes on some birds of northeastern Brazil (3)

by Dante Martins Teixeira, Jorge B. Nacinovic & Giovannini Luigi

Received 30 August 1987

In the last few years, the Ornithological Section of the Museu Nacional has made several expeditions to the residual Atlantic forests of Alagoas, Pernambuco, Paraiba, Rio Grande do Norte and Ceará, extreme northeastern Brazil. This report follows Teixeira *et al.* (1986, 1987), and is based on the field work performed December 1986 to May 1987. Specimens in the Museu Nacional ornithological collection are referred to by the initials MN plus the respective catalogue number. English names and sequence of the species follow Meyer de Schauensee (1970).

MAGELLANIC PENGUIN *Spheniscus magellanicus*

According to Fernando J. M. Pinto an immature specimen was captured alive in Maceió, Alagoas (c. 9°40′S, 35°45′W), in the 1950s. This

bird is a common winter visitor in southern Brazilian waters (Rio Grande do Sul north to Rio de Janeiro), and vagrants have even been recorded from Salvador, Bahia (c. 13°0′S, 38°30′W), but this appears to be the most northern record known in the Atlantic.

BLACK-CHESTED BUZZARD EAGLE *Geranoaetus melanoleucus*

Widely distributed in South America, this species has enlarged its distribution in Brazil considerably (Sick 1979, 1985). On 19 February 1987, we recorded 2 flying over the pasturelands of Quebrangulo, Alagoas (c. 9°15′S, 36°24′W). Recently, it was also observed in Rio de Janeiro State at Teresópolis (c. 22°25′S, 43°0′W) and Tres Rios (c. 22°05′S, 43°10′W), southeastern Brazil.

AMERICAN OYSTERCATCHER *Haematopus palliatus*

Widely distributed along the Brazilian coast, but not hitherto recorded from the northeast. On 26 April 1987, we observed an isolated specimen on a beach at Lagoa do Mundaú, Maceió, Alagoas.

PECTORAL SANDPIPER *Calidris melanotos*

A northern migrant, recorded from a great part of both coastal and interior South America. On 6 February 1987, we observed 4 on a beach near Maceió, Alagoas, side by side with *Charadrius semipalmatus, Pluvialis squatarola, Calidris alba* and *C. pusilla*. Apparently this is the first record for northeastern Brazil.

GREAT SKUA *Catharacta skua*

A northern migrant and regular visitor to South America, its range in Brazilian waters seems to be little known (Teixeira *et al*. 1986). The MN houses an adult male (MN 32920: 520 mm total length) collected by M. Dulce (26 July 1979) at Recife, Pernambuco (c. 36°0′S, 34°55′W), which was banded in USA (No. 9043–11473). We also observed at least 3 others at Maceió, Alagoas, between February and April 1987.

CAYENNE TERN *Sterna eurygnatha*

The movements of the Cayenne Tern along the Brazilian coast are poorly known (Harrison 1983) and misidentifications involving the very similar Sandwich Tern *Sterna sandvicensis* seem to be common, as both species occur side by side at least in northeastern Brazil (see also Sick 1979). Between February and April 1987 we observed flocks of this species in winter plumage at Maceió and Pontal do Peba, municipality of Piaçabuçú, Alagoas (c. 10°20′S, 36°15′W). On 12 February 1987, the MN obtained from the latter locality 3 females (MN 34899: gonads 6 mm, 223 g, 414 mm total length; MN 34900: gonads 4 mm, 215 g, 396 mm total length; MN 34901: gonads 5 mm, 208 g, 394 mm total length) and 3 males (MN 34902: gonads 4 mm, 205 g, 393 mm total length; MN 34903: gonads 4 mm, 206 g, 392 mm total length; MN34904: gonads 2 mm, 214 g, 417 mm total length).

MARRON-FACED PARAKEET *Pyrrhura leucotis*

In the South American ornithological literature (Forshaw 1978, Pinto 1978, Sick 1985, etc), the northeastern Brazilian populations of *Pyrrhura leucotis griseipectus* are stated to be endemic to the highland forests of Ceará. In recent years, however, it has been possible to observe the species, in very low numbers, in some residual forests near Murici, Alagoas (c. 9°47′S, 36°50′W). According to Yamashita & Coelho (1985), this species was also reported from Serra Negra, Pernambuco (c. 38°0′S, 8°40′W) together with the Blue-winged Macaw *Ara maracana,* which had never previously been recorded for extreme northeastern Brazil.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*

Locally distributed in Brazil. Specimens are known from the Amazonas drainage and also from Bahia, Espirito Santo and São Paulo. On 19 February 1987 we obtained an adult female (MN 34914: gonads 8 mm, 23.5 g, 150 mm total length) from Quebrangulo, Alagoas, where it seems to be a rather common bird. The female collected was captured inside its pensile nest (see Sick 1947) attached to a rock, incubating 3 white eggs which measured 22.2 × 13.6, 20.5 × 13.4, 20.9 × 13.0 mm and weighed 2, 1.7 and 1.7 g respectively.

BLACK-FRONTED NUNBIRD *Monasa nigrifrons*

Widely distributed in South America, but not hitherto recorded from extreme northeastern Brazil. The MN obtained an adult male (MN 34915: gonads 4 mm, 82 g, 297 mm total length) from Fazenda Santa Justina, municipality of Passo de Camaragibe, Alagoas (c. 9°13′S, 35°33′W) on 17 March 1987.

SPIX'S WOODCREEPER *Xiphorhynchus spixii*

Only known previously from the Amazonian drainage, we collected a subadult male (MN 34522: gonads 2 mm, 38 g, 220 mm total length) in Serra do Baturité, Ceará (c. 4°20′S, 38°56′W) on 8 February 1986.

GREY-HEADED SPINETAIL *Cranioleuca semicinerea*

Only known previously from Ceará, Bahia, Minas Gerais and southern Goiás, this Furnariid also occurs in the semi-deciduous forests of Quebrangulo, Alagoas. Between February and March 1987 the MN obtained 2 females (MN 34828: gonads 6 mm, 14.5 g, 151 mm total length; MN 34829: gonads 5 mm, 16 g, 158 mm total length) and 1 male (MN 34830: gonads 4 and 5 mm, 14.5 g, 164 mm total length) from this locality.

ORANGE-BELLIED ANTWREN *Terenura sicki*

Described only in 1983, *T. sicki* is based on a single female from Murici, Alagoas. In recent years, however, we have obtained additional specimens of this Formicariid, among them the first known adult males. Rather surprisingly, the adult male of *T. sicki* has a black-and-white streaked pattern which resembles the plumage of some *Myrmotherula,* especially the Stripe-headed Antwren *Myrmotherula longicauda,* from Amazonia. By comparison with these recently collected birds, it was also

possible to recognize the holotype of *T. sicki* as an immature female, since adult females are similar to immatures but show a quite distinct pattern, similar to the adult male's, on head and wings (Teixeira 1987). New records have also enlarged significantly the original range of *T. sicki*; the MN obtained 1 subadult male (MN 34916: gonads 1 mm, 7 g, 117 mm total length) and 1 adult female (MN 34917: gonads 4 mm, 6.4 g, 108 mm total length) from Quebrangulo, Alagoas, between 22 and 24 February 1987, and the species was also observed in the forests of Novo Lino, Alagoas (c. 9°47'S, 35°40'W), where it is a rather common bird.

SHORT-TAILED ANTTHRUSH *Chamaeza campanisona*

Discontinuously distributed. In northeastern Brazil, it has been recorded only from Serra do Baturité, Ceará. It also occurs in the highland forests of Quebrangulo, Alagoas, where it is very common.

LONG-TAILED TYRANNULET *Phylloscartes ceciliae*

Described only in 1987, *P. ceciliae* was previously known only from Murici, Alagoas. However, between February and March 1987, 3 males (MN 34918: gonads 2 mm, 6.1 g, 115 mm total length; MN 34919: gonads 4 mm, 9 g, 128 mm total length; MN 34920: gonads 3 mm, 8.5 g, 128 mm total length) and 1 female (MN 34921: gonads 3 mm, 6.8 g, 116 mm total length) were obtained from the highland forests of Quebrangulo, Alagoas. This recently collected material shows no differences from the original series of *P. ceciliae* from the type locality.

GREY ELAENIA *Myiopagis caniceps*

Not previously recorded in northeastern Brazil. The MN obtained a male (MN 34616: gonads 4 mm, 12.3 g, 129 mm total length) from Serra do Baturité, Ceará, on 11 February 1986, and 2 males (MN 34922: gonads 2 mm, 11 g, 130 mm total length; MN 34923: gonads 2 mm, 11 g, 132 mm total length) and 2 females (MN 34924; gonads 5 mm, 9.5 g, 121 mm total length; MN 34925: gonads 5 mm, 9.5 g 128 mm total length) from the highland forests of Quebrangulo, Alagoas, where it is a common bird in mixed flocks.

COCOA THRUSH *Turdus fumigatus*

Its occurrence previously in northeastern Brazil was based on doubtful records in Forbes (1881). However, we obtained an adult female (MN 34926: gonads 8 mm, 84 g, 256 mm total length) and 3 of her young (MN 34927: male, gonads 1 mm, 58 g, 163 mm total length; MN 34928: female, gonads 2 mm, 35 g, 162 mm total length; MN34929: female, gonads 2 mm, 36 g, 152 mm total length) from Fazenda Santa Justina, municipality of Passo de Camaragibe, Alagoas, on 16 March 1987. So far as we know, it is an uncommon bird in the lowland coastal forests of northeastern Brazil, but we have been able to record it from only a few localities in extreme northeastern Alagoas.

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Morphology and egg measurements of seabirds breeding on Great Salvage Island, North Atlantic

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Five species of Procellariiformes breed on Great Salvage Island in the North Atlantic Ocean: Cory's Shearwater *Calonectris diomedea borealis,* Little Shearwater *Puffinus assimilis baroli,* Bulwer's Petrel *Bulweria bulwerii,* Madeiran Storm Petrel *Oceanodroma castro* and White-faced Storm Petrel *Pelagodroma marina hypoleuca*. Between 17 June and 11 July 1983, while studying the vocal behaviour of these birds (James & Robertson 1985a, 1985b, 1985c) we made observations on their body measurements, egg measurements and incubation spells.

The breeding biology and population status of **Cory's Shearwater** on Great Salvage Island have been studied by Jouanin & Roux (1966), Zino (1971), Jouanin *et al.* (1977), Jouanin *et al.* (1980), and Mougin & Stahl (1982). The present population is about 12–15,000 breeding birds plus 15–20,000 non-breeders (Mougin & Stahl 1982). Nesting is in small caves and crevices in rock walls around the slopes of the island, and in man-made rock shelters and walls on the plateau. During our visit, egg-laying had just finished and no eggs had hatched.

Little Shearwaters were studied on Great Salvage Island during the non-breeding season (Jouanin 1964). At the start of our visit the last nestlings were fledging, but during a period of low moonlight intensity between 1 and 10 July many Little Shearwater pairs revisited their nesting grounds, which Jouanin (1964) termed a "protogamic return".

Lockley (1952) and Jouanin *et al.* (1979) studied **Bulwer's Petrel** in the Portuguese islands of the subtropical North Atlantic. It was nesting in crevices in old rock walls, and was completing egg-laying at the start of our visit; no eggs had hatched by the time we left.

The breeding of **Madeiran Storm Petrels** has been described briefly by Bannerman (1914, 1963) from the North Atlantic, but in detail by Allan (1962) on Ascension Island, South Atlantic, and by Harris (1969) on the Galapagos Islands, Pacific Ocean. At the start of our visit, egg-laying was in progress, mostly in nests in crevices in old rock walls, but a few in burrows in sandy soil on the plateau.

White-faced Storm Petrel breeding has been described briefly on the Salvages by Jouanin & Roux (1965), but in detail by Richdale (1943–44) in New Zealand. We found these petrels nesting exclusively in burrows in sandy ground on the plateau. Most pairs had well grown young, but a few were still incubating eggs.

In the limited time available, we collected information on the breeding biology of these species, and compare it with some of the previous studies.

Study area

Great Salvage Island (30°09′N, 15°52′W) is the largest of an archipelago of small uninhabited islands in the subtropical North Atlantic. It lies *c.* 250 km south of Madeira and 150 km north of the Canary Islands, and has an area of about 250 ha. It is volcanic in origin and consists largely of a plateau *c.* 100 m above sea level surrounded by steep slopes and cliffs. Two small hills rise from the plateau, the highest reaching 154 m. During our stay, the island was virtually devoid of plant-life after a prolonged dry spell. The vegetation consisted of isolated clumps of *Nicotiana glauca*, large patches of low-growing heath *Suaeda vera* in the north, and ice plants *Mesembrianthemum crystallinum* and *M. nodiflorum*. On the plateau and on some of the gentler slopes from the plateau in the southwest part of the island, cultivation was attempted last century, leaving a series of dilapidated rock-walls which provide excellent nesting crevices for all species except White-faced Storm Petrels. There was no visible sign of the extensive guano digging on the plateau described by Lockley (1942) from a visit in 1939. Our main study area was on the slopes leading to the plateau in an area of former cultivation near the research station, and there was a subsidiary study area on the northern part of the plateau for work on the White-faced Storm Petrel.

Methods

Crevice nests were located from the vocal activity of breeding birds, often in response to a tape of the species call (James & Robertson 1985c) from a Sony M9 microcassette recorder, or from inspection of potential nest

sites. Because egg-laying was in progress or had just finished for Bulwer's Petrels and Madeiran Storm Petrels, it was possible to sex birds by cloacal inspection (Serventy 1956). Cory's Shearwater and Little Shearwater pairs were sexed by voice (Wink & Ristow 1979, James & Robertson 1985a) and subsequent discriminant functions using body measurements. White-faced Storm Petrel pairs could not be sexed with certainty because they were virtually silent at the colony, but pairs were caught at nest sites as they fed their chicks and these birds were subsequently sexed from body measurements.

With the exception of Cory's Shearwaters, which were marked on the forehead with indelible ink, all birds handled were banded with a numbered metal ring supplied by the Portuguese Ringing Scheme. The birds were weighed (gm) and up to 5 measurements (mm) taken:

bill length—chord of the exposed culmen dorsally from the tip to the start of the feathering;

bill depth—depth of the bill at the base of the exposed culmen;

tarsus—diagonally from the mid-point of the joint between the tibia and metatarsus to the junction of the metatarsus and middle toe;

wing—chord of the closed but unstraightened wing from the wrist joint to the tip of the longest primary;

tail—ventrally from the base to the tip of the longest feather of the closed tail.

Linear measurements were taken with dial calipers or a metal ruler, and weights with Pesola spring balances. Eggs were measured with dial calipers to the nearest 0.1 mm and weighed to the nearest 0.1 g with Pesola spring balances.

RESULTS

Bird measurements

CORY'S SHEARWATER *Calonectris diomedea borealis*

Thirty-nine breeding pairs were measured (Table 1). For each of the 5 measurements, males were significantly larger than females, as found in the nominate subspecies *diomedea* in the Mediterranean (Wink & Ristow 1979), especially regarding weight and bill depth. There were, however, significant differences between these 2 subspecies (*borealis* and *diomedea*) (Table 2); the mean weight of *diomedea* was only 62% of that of *borealis,* and indeed *borealis* females on Great Salvage Island were considerably larger even than male *diomedea* of the Mediterranean for all measurements; male *diomedea,* for instance, were only 72% of the weight of female *borealis*.

LITTLE SHEARWATER *Puffinus assimilis baroli*

Cramp & Simmons (1977) suggest that males have longer bills than females in *baroli,* but the data from Great Salvage Island (Table 3) do not support this; however, males had significantly deeper bills, longer tarsi and were heavier than females. Most Little Shearwaters that we handled were moulting and so our sample sizes for wing and tail lengths were too small for the sexes to be compared. These are the first weight data for

TABLE 1
Measurements of adult Cory's Shearwaters *Calonectris diomedea borealis* on Great Salvage Island

		Mean	s.d.	Range	n	Paired t test	p
Bill length	♂	58.78	1.98	54.5–61.7	39	7.07	<0.001
	♀	55.67	1.91	52.0–59.9	39		
Bill depth	♂	22.59	0.77	21.0–24.1	39	14.26	<0.001
	♀	20.40	0.57	19.3–21.6	39		
Tarsus	♂	60.25	1.19	57.6–62.7	39	7.24	<0.001
	♀	58.12	1.40	54.7–61.1	39		
Wing	♂	371.1	6.0	357–386	39	5.40	<0.001
	♀	363.0	7.1	343–375	39		
Weight	♂	955.6	74.7	775–1095	39	8.58	<0.001
	♀	817.3	67.4	690–930	39		

TABLE 2
Comparison of body measurements of *Calonectris diomedea borealis* on Great Salvage Island, Atlantic Ocean with *C. d. diomedea* on islands in the Aegean Sea, Mediterranean (Wink & Ristow 1979)

	Male		**Female**	
	borealis	*diomedea*	*borealis*	*diomedea*
Bill length	58.8±2.0	49.5±1.4	55.7±1.9	46.2±1.2
Bill depth	22.6±0.8	18.6±0.8	20.4±0.6	16.6±0.5
Tarsus	60.3±1.2	53.4±1.7	58.1±1.4	52.0±1.2
Wing	371.1±6.0	341.8±7.6	363.0±7.1	331.1±8.4
Weight	955.6±74.7	585.8±58.7	817.3±67.4	514.1±64.0

North Atlantic Little Shearwaters, and indicate that *P. a. baroli* is lighter than *P. a. elegans* of Gough Island, South Atlantic, which averaged 225.6 g (Swales 1965).

BULWER'S PETREL *Bulweria bulwerii*

Morphometric data for 52 birds of each sex, including 48 pairs, are given in Table 4. Males were significantly larger than females for all measurements except wing length. Bill depth gave the best differentiation between the sexes with only 3 females out of 48 (6%) having a deeper bill than their partner, and 2 (4%) the same depth. Jouanin *et al.* (1979) gave data for a sample (mixed sexes) from Great Salvage Island, and failed to find any significant differences between the sexes perhaps because of increased variance caused by combining measurements of birds from many different breeding populations, in both the Atlantic and Pacific Oceans. For male tarsus lengths, for example, the variance of their sample was significantly greater than ours ($F_{21,51}=2.06$, $p<0.05$). Our results were similar to those given by Cramp & Simmons (1977), except that

TABLE 3

Measurements of adult Little Shearwaters *Puffinus assimilis baroli* on Great Salvage Island

		Mean	s.d.	Range	n	Paired t test	p
Bill length	♂	25.28	0.94	23.7–26.7	24	0.62	ns
	♀	25.13	0.66	23.7–26.3	17		
Bill depth	♂	9.20	0.39	8.4–9.8	24	3.82	<0.001
	♀	8.84	0.21	8.5–9.2	17		
Tarsus	♂	36.80	1.06	34.7–39.0	24	2.49	<0.05
	♀	36.11	0.73	34.4–37.0	17		
Wing	♂	177.5	2.5	174–180	4		
	♀	178.6	6.4	175–186	3		
Tail	♂	76.3	2.5	74–79	3		
	♀	71.4	5.8	63–78	5		
Weight	♂	160.3	11.9	142–189	24	2.97	<0.001
	♀	151.2	7.8	139–166	17		

Notes: (a) Most birds were moulting wing and tail feathers and although all birds were measured, only those that had finished moult are presented here. Sample sizes were too small to compare the sexes.

(b) From 14 pairs measured, and compared with paired t test, similar results were obtained, with bill depth being the most dimorphic ($t=8.54$, <0.001); tarsus ($t=3.42$, <0.01) and weight ($t=2.85$, <0.05) were less so.

TABLE 4

Measurements of adult Bulwer's Petrels *Bulweria bulwerii* on Great Salvage Island

		Mean	s.d.	Range	n	Paired t test	p
Bill length	♂	21.64	0.57	20.6–23.0	52	4.20	<0.001
	♀	21.19	0.53	20.1–22.3	52		
Bill depth	♂	9.89	0.36	8.7–10.5	52	9.51	<0.001
	♀	9.19	0.40	8.0–9.9	52		
Tarsus	♂	27.69	0.77	25.7–29.4	52	2.66	<0.01
	♀	27.28	0.80	25.8–29.4	52		
Wing	♂	198.1	4.1	190–208	52	0.36	ns
	♀	197.8	3.6	190–204	52		
Weight	♂	107.1	11.8	87–131	52	3.33	<0.01
	♀	99.9	10.0	75–116	52		

Note. A female weighed only 73 g after an incubation spell of at least 12 days, but the data presented above are the weights of birds at first encounter. (See text on weight loss of incubating birds.)

females on Great Salvage Island were significantly heavier than 5 weighed on Deserta Grande ($t=2.44$, $p<0.01$). (For other measurements of *B. bulwerii* see Zonfrillo in this issue (*Bull. Brit. Orn. Cl.* 108(2): 72).

MADEIRAN STORM PETREL *Oceanodroma castro*

Table 5 gives measurements of 37 breeding males and 35 breeding females, including 31 known pairs. Females had significantly longer

TABLE 5
Measurements of adult Madeiran Storm Petrels *Oceanodroma castro* on Great Salvage Island

		Mean	s.d.	Range	n	Paired t test	p
Bill length	♂	14.73	0.66	13.4–16.1	37	0.58	ns
	♀	14.65	0.56	13.7–15.8	35		
Tarsus	♂	23.08	0.67	21.3–24.0	37	0.01	ns
	♀	23.08	0.64	22.0–24.3	35		
Wing length	♂	149.5	3.9	141–158	37	−3.04	<0.01
	♀	152.1	3.2	146–158	35		
Tail length	♂	65.7	1.7	62–69	37	−1.02	ns
	♀	66.2	2.4	62–71	35		
Weight	♂	44.8	4.3	36–55	37	−0.85	ns
	♀	45.6	3.7	35–51	35		

TABLE 6
Measurements of adult White-faced Storm Petrels *Pelagodroma marina hypoleuca* on Great Salvage Island

	Mean	s.d.	Range	n
Bill length	18.20	0.55	16.9–19.7	54
Tarsus	44.50	0.95	41.4–46.1	54
Wing	159.4	3.97	150–168	54
Tail	70.6	2.77	64–76	54
Weight	53.50	6.75	39–69	54

wings than males, but there were no significant differences in other measurements. Cramp & Simmons (1977), from an examination of a small sample of museum specimens collected in the North Atlantic, had found that females had significantly longer tails as well as wings; but from our findings tail length is not a reliable character to use in sexing live birds.

WHITE-FACED STORM PETREL *Pelagodroma marina hypoleuca*

Table 6 gives measurements of 54 birds, including 17 pairs, caught at their breeding colony as they returned at night to feed their chicks. No morphometric data exist for White-faced Storm Petrels to indicate if they show the reversed sexual dimorphism which is usual for the Hydrobatidae. We compared the difference in wing length and tail length between members of each of the 17 known pairs, with all possible pairings of the 34 birds involved. If White-faced Storm Petrels were not sexually dimorphic, then the mean difference within pairs would be the same as the mean difference of the population unless they were mating assortatively. The difference in wing lengths within pairs was 6.5 ± 3.3 mm (median 7 mm, $n=17$) compared with 5.0 ± 3.6 mm (median 4 mm, $n=561$) for the population (Mann-Whitney U test, $p<0.05$); while difference in tail lengths within pairs was 3.4 ± 2.4 mm (median 3 mm, $n=17$) compared with 2.8 ± 2.4 mm (median 2 mm $n=561$) (Mann-Whitney U

TABLE 7

Egg measurements of Cory's Shearwater *Calonectris diomedea borealis*, Bulwer's Petrel *Bulweria bulwerii* and Madeiran Storm Petrel *Oceanodroma castro* on Great Salvage Island

	Cory's Shearwater	Bulwer's Petrel	Madeiran Storm Petrel
Sample size	51	56	32
Length (mm)	75.55 ± 2.98	42.01 ± 1.34	32.49 ± 1.11
Width (mm)	49.48 ± 1.56	30.59 ± 1.01	24.28 ± 0.89
Initial weight (g)	96.88 ± 6.94	20.73 ± 1.83	10.28 ± 1.14
Wt loss per day (g)	0.304 ± 0.081	0.074 ± 0.020	0.039 ± 0.021
Calculated fresh weight (g)	101.74	21.66	10.57
Fresh weight as % female weight	12%	22%	23%

test, $p=0.26$). The significant result for wing lengths indicates that White-faced Storm Petrels are sexually dimorphic for that measurement, and probably for tail length also since the 2 measurements were positively correlated ($r=0.62$, $p<0.001$); but whether females are larger or smaller than males cannot be stated.

Egg measurements and weight loss

Table 7 gives the size of eggs of Cory's Shearwater, Bulwer's Petrel and Madeiran Storm Petrel. Because most birds had finished egg-laying we could obtain very few fresh weights, but we recorded initial weights and those taken up to 22 days later to study the rate of weight loss. We calculated approximate fresh weights from the formula: $w=klb^2$ (Hoyt 1979) where l=length and b=breadth. using $k=0.55$ from Zino (1971) and our measurements of a few fresh eggs. The calculated fresh egg weight averaged 12% of the female's weight for Cory's Shearwater, 22% for Bulwer's Petrel and 23% for the Madeiran Storm Petrel.

Incubation spells and body weight loss

Bulweria bulwerii. The longest incubation spells that we recorded were 2 of at least 13 days each. Female E001415 weighed 114 g on 19 June and 82 g on 1 July, but had changed with her mate by 3 July. Female E001451 weighed 106 g on 21 June, 77 g on 1 July, 73 g on 3 July and had been replaced by her mate on 4 July. At least 5 other birds had incubation spells of 10 or more days. The usual incubation spell seemed to last at least a week. Lockley (1952) recorded that one bird on Deserta Grande incubated for at least 5 days, incorrectly quoted by Cramp & Simmons (1977) as "spells of 1–5 days".

Of 21 birds re-weighed after at least 7 days during their incubation spell, their mean weight loss from first weighing was 2.50 ± 0.50 g per day (range 1.38–3.29) or 2.4% of initial weight per day, with no significant difference between males (2.60 ± 0.47, $n=9$) and females (2.42 ± 0.53, $n=12$) ($t=0.82$, n.s.). The total weight loss averaged about 20% of initial body weight over an incubation spell of 8–9 days.

Oceanodroma castro. Two birds had incubation spells of at least 6 days and 6 other birds had spells of 5 or more days. Female E001642 weighed 44 g on 6 July and 34 g on 11 July, and male E001665 weighed 50 g and 42 g on the same respective dates. Incubation spells on Great Salvage Island were about similar to the 4–7 days recorded by Harris (1969) on the Galapagos.

For 12 birds that were re-weighed after at least 3 days during an incubation spell, the mean weight loss from first weighing was 1.81 ± 0.35 g per day (range 1.25–2.50) or 4% of initial weight per day, with no significant difference between males (1.79 ± 0.19, $n=6$) and females (1.84 ± 0.47, $n=6$) ($t=-0.2$, n.s.). This daily weight loss was considerably more than the 2.4% per day of Bulwer's Petrels, but the total loss over an incubation spell of 5 days would have been similar at about 20% of initial body weight.

Discussion

Great Salvage Island is one of the most important breeding sites in the North Atlantic for oceanic seabirds, containing populations of Cory's Shearwater, Bulwer's Petrel and Madeiran Storm Petrel which are probably the largest in the area. Of the 5 species of seabirds breeding there, only Cory's Shearwater has been studied in detail. French scientists have studied the population dynamics for over 20 years and Zino (1971) made a detailed study of breeding during parts of 2 seasons. The other 4 species have been largely neglected, even though nests are numerous and accessible. Our results, showing significant mensural differences between known subspecies, probably indicate that there is little genetic interchange between insular breeding populations, even though the feeding ranges of the different North Atlantic populations are likely to overlap extensively. To maintain genetic diversity in these species it is important that more islands are protected as scientific reserves, and managed so as to both remove predators (including man) and to prevent their acccidental or deliberate introduction. Great Salvage Island is probably safe as long as the Portuguese Government and World Wildlife Fund continue to support the presence of wardens during the seabird breeding season, and while regular watches for ground predators are strictly maintained.

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An old record of the Pearly-breasted Cuckoo in North America and a nomenclatural critique

by Richard C. Banks

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The type of *Coccyzus julieni* Lawrence, 1864, from Sombrero Island, West Indies, is a specimen of the species currently known as the Pearly-breasted (or Euler's) Cuckoo *Coccyzus euleri* Cabanis, 1873, of South

America, as pointed out by Ridgway (1916) and Greenway (1978). Sombrero Island is a small key east of the Virgin Islands and northwest of Anguilla, the northernmost of the Leeward Islands of the Lesser Antilles. This is the only record of this cuckoo in North America (as defined by AOU 1983). Recognition of the identity of this bird raises a nomenclatural problem because the name *julieni* is now generally carried as a junior synonym of *C. americanus*, the Yellow-billed Cuckoo of North America. This problem is discussed below.

Alexis A. Julien collected a small number of birds in 1863 on Sombrero Island, and sent the specimens to George N. Lawrence. Lawrence (1863, 1864a) published separate descriptions of 2 new species from this collection and a complete listing of Julien's birds (1864b) with notes that accompanied the specimens. One of the new species (Lawrence 1864a) was *Coccyzus julieni,* named "in compliment" to its collector. This species "differs from the other yellow-billed West India species, in being without any rufous coloring below or on the quills". The other "yellow-billed species" (*sensu* Sclater 1862) of *Coccyzus* known from the West Indies were *C. americanus* and what is now known as *C. minor*. The new name fell into immediate neglect, and was not mentioned by Sclater (1870), then the authority on New World cuckoos.

In 1873, Cabanis described a new species of cuckoo from Brazil, as *Coccygus euleri*. (*Coccygus* was an emendation of *Coccyzus* Vieillot.) This species was distinguished from the sympatrically wintering *C. americanus* by its smaller size and the lack of rufous colouring on the primaries. Cabanis did not mention *julieni*; if he was aware of Lawrence's (1864a) paper he may not have felt that a comparison of his Brazilian bird with one from the Caribbean was necessary.

Shelley (*in* Sclater & Shelley 1891) treated the names *julieni* and *euleri* as synonyms of *C. americanus*, without comment. Penard & Penard (1910) and Hellmayr (1913) distinguished *euleri* as a South American species distinct from *americanus*, and noted that it is widely distributed in South America; neither mentioned the name *julieni*.

Ridgway (1916) recognized that the type of *C. julieni* was a young bird and that, allowing for differences related to age, it agreed closely with adult Brazilian specimens of *euleri*. He therefore treated *euleri* as a junior synonym of *julieni*. He considered *julieni* to be a South American subspecies of *americanus* and thought that it might also be the breeding form of *americanus* in the West Indies. Cory (1919) similarly treated *julieni* as a South American subspecies of *americanus*, with a single West Indian occurrence, but he also gave species status to *euleri*, to which he ascribed a South American range similar to that of *julieni*.

Hellmayr (1929) cast doubt on Ridgway's (1916) treatment of *julieni*, both as being conspecific with *euleri* and as being a recognizable subspecies of *americanus*. He retained *euleri* as the name of the South American species and at least implied that *julieni* was a synonym of *americanus americanus* (recognizing *americanus occidentalis* as a western North American subspecies). Hellmayr's views were accepted by Peters (1940) and reinforced by Griscom & Greenway (1941). Griscom examined the type of *julieni* and regarded it "as an immature [migrant] *americanus* of minimum size, and certainly not *euleri* of southern Brazil".

Most discussions of South American cuckoos since 1930 seem to follow the taxonomic conclusions of Hellmayr (1929) stated above, but some seem to follow either Ridgway (1916) or Cory (1919). A fourth treatment was devised by Pinto (1966), who believed that *euleri* was a South American subspecies of *americanus* but not a synonym of *julieni*, placement of which is not stated. In many papers, only one of the names *julieni* or *euleri* is used, in either a specific or subspecific sense, and it is not possible to determine the authors' concept of the other name or even how many taxa are recognized.

An important factor in the decision of Pinto (1966) that *euleri* was not a synonym of *julieni* was the fact that the type of the latter was from an island in the Lesser Antilles. However, he later (Pinto 1978) elevated *euleri* to specific rank and listed the Lesser Antilles as possibly in the range of the species, apparently incorporating the locality of the type of *julieni*. It is likely, if not probable, that others who recognized the similarity/identity of *julieni* and *euleri* were confused by the fact that *julieni* was named from Sombrero Island in the Lesser Antilles, well away from the range of most South American birds. On geographical grounds alone it would seem more likely that *julieni* should be associated with the North American than the South American species.

In a discussion of the type specimen of *Coccyzus julieni,* Greenway (1978: 112) noted that both Ridgway and J. T. Zimmer had annotated the label by writing in the name *Coccyzus euleri*. He further observed that the "inner webs of [the] primaries are white, not brown as in *americanus*" and that "Peters' listing of this name [*julieni*] as a synonym of *americanus* appears to have been an error". Greenway (1978) listed the specimen as "Now *Coccyzus euleri* (Cabanis)", but did not take the next logical step to point out that *julieni* predates *euleri* or note that this is the sole record of that species outside the continent of South America.

In July 1987 I examined the holotype of *Coccyzus julieni* Lawrence (AMNH 44495), and was joined in that study by Robert W. Dickerman. The unsexed specimen is in poor condition; the wings are loose and several rectrices are missing. There is no rufous on the dorsal surface of the primaries nor on the inner webs of the ventral surface of the primaries. My measurements of the wing (left 125.7, right 127.1 mm) are slightly greater than the 124 mm reported by Greenway (1978), but they are smaller than any of nearly 700 adult *americanus* (both sexes) that I recently measured (Banks 1988) and fit well with measurements of adult male *euleri*. The range of wing lengths of 219 male *americanus* from eastern North America was 128.7–155.6 (mean 140.81) mm; of 7 adult male *euleri* it was 123.9–131.5 (mean 127.9) mm. Females of both species average about 4 mm larger; measurements of first-year birds are not available. On direct comparison with series of North American *americanus* and South American *euleri*, Dickerman and I agreed that the specimen unquestionably is of the South American form.

The specific name *Coccyzus julieni* Lawrence, 1864 clearly predates *C. euleri* Cabanis, 1873, and is the correct name for the small South American *americanus*-like cuckoos that lack reddish brown colour on the primaries. Although *julieni* has been used as the senior synonym of *euleri* only by Ridgway (1916) and perhaps Steinbacher (1962), who did not

mention *euleri*, it has been used for a South American subspecies of *americanus* by several other authors (e.g. Laubmann 1939, Gyldenstolpe 1945, Steullet & Deautier 1945). Some have incorrectly used the name *julieni* for a form of *C. americanus* with pale rather than dark cinnamon or brown on the primaries, a variable colour character that is not geographically oriented in North American breeding birds (Banks 1988).

Whether the South American birds should be treated as a species or as a subspecies of *americanus* is problematical, although the former is preferred by recent authors. The 2 populations are perhaps best considered as allospecies of a superspecies. The South American *julieni* may have developed from wintering *americanus* that failed to return north to breed.

Ridgway (1916) suggested that the type specimen of *C. julieni* might not have come from Sombrero Island. A. A. Julien was a resident on Sombrero Island from August 1860 until at least early 1864, and sent Lawrence specimens of, or notes on, at least 34 species of birds as well as an account of the island and its bird life (Lawrence 1864b). Included among these notes is a detailed account of the taking of the cuckoo (Lawrence 1864b: 99, Greenway 1978). Even though *C. julieni* was described in a paper with 5 other species from various South American countries (Lawrence 1864a), there is no evidence to suggest that the specimen was not among those sent from Sombrero Island by Julien.

Conclusion

The type specimen of *Coccyzus julieni* Lawrence, 1864, from Sombrero Island in the Caribbean, is a specimen of the South American species now called the Pearly-breasted Cuckoo *Coccyzus euleri* Cabanis, 1873. The name *julieni* has priority and must be used for the South American species. The Sombrero Island bird provides the only record of the species in North America.

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Weights of some New Caledonian birds

by Charles A. Ross

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In August and September 1986 I spent 24 days in the Southern District of New Caledonia collecting avian anatomical specimens for use in systematic studies and to provide comparative material for identifying collections of Holocene fossils (see Balouet & Olson, in press). Of the 360 specimens obtained, 253 were Passeriformes and included 21 of the 24 native, resident species of passerines (Hannecart & Letocart 1980, 1983).

Collections were made at 5 localities: Mount Dzumac, c. 25 km NE of Noumea; La Foa and vicinity; Bouloupari and vicinity; Sarramea; and the Reserve Forestiere du Col D'Amieu, c. 10 km NE of Sarramea. The Col D'Amieu and Mount Dzumac localities are at 400–1000 m a.s.l. and forested. The other localities are on the western coastal plain and are open savannah with scrub and secondary forest, except the Sarramea locality which is mixed forest and agricultural lands (coffee and fruit trees).

Weights were obtained using pesola spring scales (10, 30, 100, 300 and 1000 g). I know of no published records of weights for many of the following species, although Warner (unpubl. doctoral thesis 1947) presents weights for most species taken from specimens obtained by Thomas L. Macmillan while he was collecting in New Caledonia for the Whitney South Seas Expeditions (1937–1939).

In instances where the sex of specimens is noted, sex was determined by dissection and examination of gonads. Species level nomenclature follows Morony *et al.* (1975). All specimens are deposited in the National Museum of Natural History, Smithsonian Institution, and the Museum National d'Histoire Naturelle, Paris.

The weight of each individual to the nearest 0.5 g (for birds less than 50 g) or 1 g (for heavier birds) is listed for samples of 6 or fewer birds. The mean, standard deviation, range and sample size are given for larger samples. In instances where samples are analysed by sex, the entire sample including unsexed birds is presented first. A query indicates sex unknown.

Tachybaptus novaehollandiae leucosternos ♂ 242; ♀ 189
Halietor m. melanoleucos (adult) ♂ 920; ♀ 570, 570, 630, 670, 700, 730; ?680
Nycticorax c. caledonicus ♂ 810
Anas poecilorhyncha pelewensis ♂ 990; ♀ 960
Accipiter haplochrous ♂ 152, 152, 162; ♀ 227, 268, 268
Porphyrio poliocephalus caledonicus ♂ 840, 840; ♀ 690, 690, 820 gravid
Columba vitiensis hypoenochroa ♂ 410, 430
Drepanoptila holosericea ♂ 210; ?220
Ducula goliath ♀ 600
Trichoglossus haematodus deplanchi ♂ 109
Cyanoramphus novaezelandiae saisseti ?72
Collocalia esculenta albidior ♂ 5.0; ♀ 5.0, 5.5
Collocalia spodiopygia leucopygia 6.8±0.6 (6.0–8.5, N=31); ♂ 6.6±0.5 (6.0–7.5, N=10); ♀ 7.1±0.6 (6.0–8.5, N=14)
Halcyon sancta canacorum ♂ 36.5, 41.0, 41.5, 43,0; ♀ 39.5, 43.5
Aplonis s. striata ♂ 53, 60; ?49.5
Artamus leucorhynchus melaleucus ♂ 33.0, 36.0, 37.0; ♀ 31.5, 36.0, 39.5
Corvus moneduloides 275.4±31.5 (230–330, N=22); ♂ 289.3±9.9 (280–310, N=7); ♀ 275.4±36.3 (230–330, N=13)
Coracina analis ♂ 97; ♀ 70
Coracina c. caledonica 138.6±16.0 (117–180, N=21); ♂ 149.1±13.6 (135–180, N=8); ♀ 132.8±17.1 (117–170, N=9)
Lalage leucopygia montrosieri ♂ 16.5, 21.0
Gerygone f. flavolateralis 6.3±0.3 (5.5–6.5, N=12)
Megalulurus mariei 25.0±2.7 (20.05–29.25, N=14); ♂ 26.9±1.5 (24.45–29.25, N=8); ♀ 20.05, 22.1, 22.3, 22.7, 23.5, 24.45 (from Warner 1947)
Eopsaltria flaviventris ♂ 14.0; ♀ 10.5, 14.5
Clytorhynchus p. pachycephaloides ♂ 24.5, 25.0
Myiagra c. caledonica 10.8±0.7 (10.0–12.0, N=11)
Rhipidura fuliginosa bulgeri 6.6±0.7 (6.0–8.0, N=11)
Rhipidura spilodera verreauxi ♂ 11.0, 11.2, 12.0; ♀ 9.2, 9.7, 9.85, 10.2 (from Warner 1947)

Pachycephala caledonica 20.9±1.3 (18.0–23.0, N=17)
Pachycephala rufiventris xanthetraea 18.2±1.8 (15.5–23.0, N=20); ♂ 18.4±1.5 (16.5–22.0, N=11); ♀ 17.6±1.5 (15.5–19.0, N=7)
Zosterops lateralis griseonota 11.6±0.9 (10.5–13.0, N=7)
Zosterops xanthochroa 10.3±0.9 (8.5–12.0, N=46); ♂ 10.4±0.8 (9.0–12.0, N=18); ♀ 9.9±0.8 (9.0–11.5, N=13)
Gymnomyza aubryana ♂ 211.0, 230.6, 284.2; ♀ 151.8, 159.3 (from Warner 1947)
Lichmera i. incana 13.1±2.0 (9.5–14.5, N=8)
Myzomela sanguinolenta caledonica ♂ 7.5, 8.2; ♀ 6.9, 6.6
Philemon diemenensis 69.3±8.9 (53.0–84.0, N=22); ♂ 74.5±3.9 (69.5–84.0, N=9); ♀ 53.0, 55.0, 56.0, 62.0, 62.0, 62.0
Phylidonyris undulata ♀ 16.0
Erythrura psittacea ♂ 11.5

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Variation in the Ground Woodpecker *Geocolaptes olivaceus*

by P. A. Clancey

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The endemic austral African Ground Woodpecker *Geocolaptes olivaceus* (Gmelin), 1788: Cape of Good Hope, is restricted to the Cape Province south of the Orange R., extending north of this in the east of its tenuous

range to reach the Transvaal Drakensberg (to about Lydenburg). It favours mountains and karooid country, even the most eroded and stony, in the western sector of its range, but to the east over the southeastern highlands it affects the slopes of grassed hills and mountains, breeding to as high as the alpine zone of the Lesotho/Natal Drakensberg (above c. 2865 m a.s.l.) during October and November (Brown & Barnes 1984). In the western and central parts of the Cape it starts to breed rather earlier, from about August (see McLachlan & Liversidge 1957). While generally considered to be a local nomad, evidence from the eastern parts of its range reveals marked seasonal movement, as Drakensberg alpine zone breeders are absent from the nesting grounds in winter, and at this time it has been taken well to the north and west of its established breeding distribution in the Transvaal in July. In a recent study it has been found to occur seasonally in districts in the Orange Free State where it has not been found to breed. Evidence for more than local nomadism in the present woodpecker is currently restricted to areas peripheral to the Drakensberg system in the east of its distribution, and may be confined to such eastern elements.

The phylogenetic background to *G. olivaceus* is still unresolved, but its origins are assuredly Afrotropical and it is probably descended from a primitive ancestor of the same lineage as the contemporary *Campethera* assemblage of African arboreal woodpeckers. This revised opinion is lent support by its largely allopatric and southwestern oriented terminal distribution in relation to that of comparably sized arboreal picids occurring in the Subregion.

Geographical variation in the Ground Woodpecker was first alluded to by P. L. Sclater (1866) and demonstrated in more recent times by Meinertzhagen (1949), followed by Clancey (1952). In a short review of the variation as understood on the limited material then available Clancey (1957) admitted 5 races, but later (Clancey 1965) this was reduced to 3, which arrangement is the one adopted in the *SAOS Checklist of Southern African Birds* (Clancey 1980). In a recent study, Earlé (1986) viewed the marked variation west–east as strongly clinal and apparently unstepped, so much so that he felt that it should be considered to be a monotypic species. As the *modus operandi* employed in the 1986 appraisal did not address the variation between the juvenile and adult plumages and the modifying influences on specimens of the bird's environment and life-style (daily exposure to intense sunlight, soil staining and plumage erosion through the use of roosting and breeding tunnels in banks), I have felt it necessary to re-examine the situation, using the greater number of specimens in southern African collections. Furthermore, the possible presence of a definable contact zone between the colour extremes was not considered. Earlier, I examined the series in the collection of the British Museum (Nat. Hist.), Tring.

Broadly speaking the geographically relevant variation falls into 2 broad categories which are correlated with the widely differing climatic and ecological regimes covered by its distribution, which spans from 17°45′E to 31°00′E. As will be appreciated from Table 1, size variation west–east of taxonomic import does not exist, but on the other hand colour and pattern differences are well-marked, and by ignoring these

TABLE 1

Wing- and culmen-lengths (mm) of adults of various populations of the southern African Ground Woodpecker *Geocolaptes olivaceus* (Gmelin).

	Wings flattened of ♂♀				Culmens of ♂♀			
Region	n	Range	$\bar{X}$	SD	n	Range	$\bar{X}$	SD
1. W. Cape	29	125–137	131.8	3.52	17	38–42	39.5	1.12
2. C. Cape	10	126–134	130.5	2.32	10	36–43	39.8	2.61
3. E. Cape	36	125–136	130.2	2.45	34	36.5–44.5	40.8	1.90
4. Lesotho	7	125–135	128.7	3.76	7	38.5–42.5	40.4	1.51
5. Natal	7	127–134	129.1	2.34	7	31–42	37.5	3.49
6. O.F.S.	3	130–133	131.5	1.50	3	38.5–41	39.8	1.25
7. Transvaal	6	126.5–132.5	130.0	2.66	6	38–45	39.8	2.65

It will be noted that little variation of taxonomic relevance is present in these morphological parameters west–east, apart from a trend to shorter wing-length in the southeastern Summer Rainfall District, samples 4 & 5. The minimal variation seen in culmen-length is probably a correlate of the nature of the substrate or seasonal activity or both. The high standard deviation in the Natal sample is occasioned by the very short bill of an example of *G. o. petrobates* from Giants Castle Game Reserve on the Lesotho/Natal border.

In the case of the W. Cape sample, the wing-length norm ranges 130–137 mm (79.31%), those with wings down to 125 mm (20.68%) probably retaining remiges of the juvenile dress. This is equally true of the other populations.

differences in the taxonomic arrangement of the species much of evolutionary significance is lost.

The populations of the Winter Rainfall District (Mediterranean-type climate) of the southwestern Cape—topotypical of *G. olivaceus*—and the interior Karoo regions are characterized by their dark brownish grey pileum and saturated olive-brown back, marked with short broken bars and spots of yellowish white. Ventrally, the fore-throat is dusky and the upper breast furnished with a relatively well-defined band of light olivaceous brown, freckled with yellow or greenish white. The mid-venter is extensively deep crimson and the flanks are heavily barred or scaled with brown on buff. In the west, birds agreeing with this diagnosis extend from the Cape Peninsula, north to Springbok in Little Namaqualand, and range as far east as c. 25°50′E. They constitute the nominate subspecies *G. o. olivaceus*.

To the immediate east of the populations just dealt with, a marked change in colour facies in association with the climatic shift from a winter to summer rainfall regime is present, the phenotypic variation manifest in the lighter grey head-top, paler, more olive, less dark brown, back, lighter fore-throat and mid-breast and dilute mid-ventral red. It was to the characters of this population that Sclater (1866) first drew attention when he used *Geocolaptes arator* (*Picus arator* Cuvier, *Régné Anim.*, i, 1817: 423: western Cape) for material from the Windvogelberg in the Cathcart Division of the eastern Cape. Study of the reasonably adequate material of this eastern Cape population shows that it is the result of a secondary contact between the nominate subspecies and elements occurring still further east in South Africa. These more eastern birds, in the case of those

breeding in the southeastern highland massif of Lesotho and adjacent territories, are separable from those of the secondary contact zone by having (or showing a reversion to) a darker (bluer) grey pileum and a plain dark earthen brown back. Ventrally these high montane breeders are similar to those of the contact zone, differing, as described, in their darker and unfreckled dorsal surfaces. To this population the name *G. o. petrobates* Clancey, 1952, is applicable.

Lying peripherally to *G. o. petrobates* and present at lower altitudes from the interior of Natal to the Orange Free State and the southern and eastern Transvaal occur birds which differ again in the pale head-top (as in eastern Cape examples), the yellowish olive back largely immaculate. Ventrally they are appreciably whiter from the fore-throat to the breast, the breast-band vestigial laterally, while the mid-ventral pink is clearer and the barring of the flanks much lighter. This discrete population was initially detected by Austin Roberts, but was named in 1952 by the present author as *G. o. prometheus*. This race is subject to a measure of winter movement which takes it beyond the established limits of its breeding range, but the extent of such vagility remains to be determined.

From this re-assessment of the variation occurring in *G. olivaceus* it is clearly evident that at some stage in the species' evolutionary history the populations were isolated into western (largely karooid) and eastern (grassed Afromontane) groups, coming together in more recent times to form a secondary contact zone in the eastern Cape. The species' distribution as shown on map 383 in Snow (1978) with clusterings of locality records in the southwest and the east of the range is further evidence of a former polarization of populations into western and eastern isolates. The pattern of variation is not clinal (in the strict Huxleyan sense). Indeed, clinal variation in southern Africa, with its differing climates and complex mosaic of biomes, is a relatively rare phenomenon in such mobile organisms as birds.

The eastern Cape intergrades which are present between 25°50′ and 27°35′E do not constitute a satisfactory taxonomic unit, showing introgression by genes of nominate *olivaceus* over the venter in many, while all have the mantle and scapulars freckled with yellowish white when fresh—a further indicator of genetic affinity with the said race. In the circumstances, such secondary contact intergrades should be associated with it and the name *G. arator* (Cuvier), as employed by Sclater (1866), left in its synonymy.

The geographical variation of the Ground Woodpecker is satisfactorily represented by 3 subspecies and the recognition of a definable zone of secondary contact between the markedly different western and eastern phenotypes, the revised characters and ranges of the 3 subspecies being as hereunder given.

(a) **Geocolaptes olivaceus olivaceus** (Gmelin), 1788: Cape of Good Hope, Cape Province.

Synonyms: Picus arator Cuvier, 1817: South Africa (here restricted to the western Cape Province).

Picus terrestris Burchell, 1822: near Windheuvel, Karoo, Cape Province (see Davis & Hull 1983).

Geocolaptes olivaceus theresae Meinertzhagen, 1949: 10 m

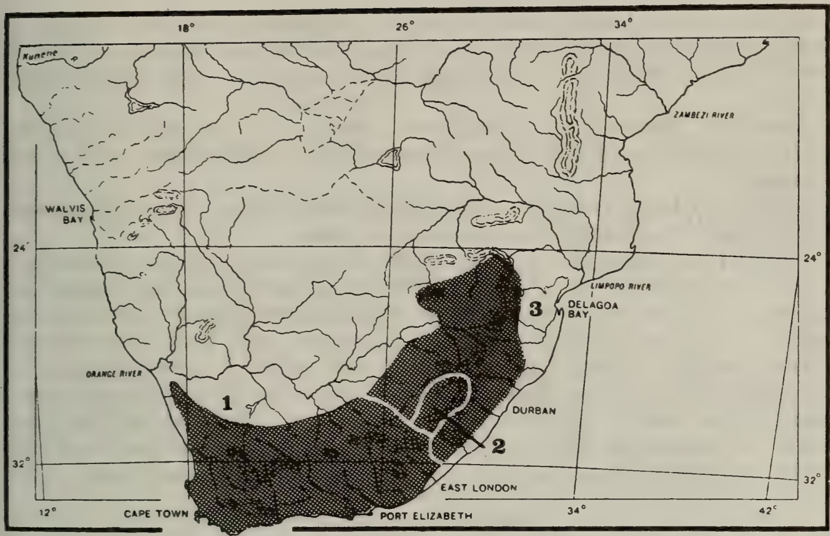

Figure 1. Sketch-map showing the disposition of the 3 racial groupings of populations of the Ground Woodpecker in southern Africa
1. *Geocolaptes olivaceus olivaceus* (Gmelin). Karooid.
2. *Geocolaptes olivaceus petrobates* Clancey. Montane karooid.
3. *Geocolaptes olivaceus prometheus* Clancey. Montane; grassed slopes.

N of Springbok, Little Namaqualand, NW Cape Province (see "Remarks" below).

Crown deep brownish grey; back saturated olive-brown (Saccardo's Olive—see Ridgway 1912) marked with short, broken bars and spots of yellowish white. Throat dusky; upper breast with band of light olive-brown, speckled with yellow or white; mid-venter extensively saturated Scarlet Red, the flanks barred dark brown on buff.

Range. Cape Province from the Peninsula north to Little Namaqualand, and east to c. 25°50′E. East of this, intergrades broadly in the eastern Cape and southwestern Orange Free State with *G. o. prometheus* and *G. o. petrobates*, the zone of secondary contact lying between 25°50′ and 27°35′E.

Remarks. The description of *G. o. theresae* resulted from a comparison between Little Namaqualand specimens and others from the east of the species' range rather than with topotypes of the nominate race from the Cape of Good Hope.

(b) **Geocolaptes olivaceus petrobates** Clancey, 1952: confl. of Malaoaneng and Little Bokong Rivers, Lesotho.

Compared with last, crown bluish grey; back plain dark earthen brown (about cold Brownish Olive) without broken bars and spots of yellowish white. Throat and mid-breast whiter, and mid-ventral red paler, more pinkish (Peach Red/Scarlet). Wings darker.

Range. High country of northeastern Cape and adjacent Transkei (Naude's Nek Pass, Ben Macdhui, and Pitseng Pass, Mt Fletcher) to the

Maluti ranges of Lesotho and the high Drakensberg Mountain range on the Transkei and Natal borders with Lesotho. Breeds to as high as 3000 m (9840 ft) a.s.l., which heights are vacated in winter (see Brown & Barnes 1984).

Remarks. Named on 2 specimens from the type-locality. Recent material shows that 2 of the initial characters were founded on individual variation.

(c) **Geocolaptes olivaceus prometheus** Clancey, 1952: Woodbush Forest Reserve, Tzaneen, northern Transvaal.

Grey of head-top lighter than in the foregoing subspecies, and back paler, more yellowish, olive (Light Brownish Olive); largely immaculate. Throat and breast much whiter, with indications of a breast-band restricted to the sides; mid-ventral surface clearer pink than in *petrobates* (Strawberry Pink), and flanks with paler and reduced brown barring.

Range. Orange Free State, Transkei below the Drakensberg escarpment to the interior of Natal and southern and southeastern Transvaal north in the east to about Lydenburg. Records from further north (to Tzaneen) and west (to Pretoria) are of post-breeding wanderers.

Acknowledgements

For access to the series in the collection of the British Museum (Nat. Hist.), Tring, I am grateful to Mr P. R. Colston. In southern Africa, Dr J. M. Mendelsohn placed the facilities of the Durban Natural History Museum at my disposal, while the authorities of the South African Museum (Cape Town), the East London Museum and the Transvaal Museum (Pretoria) kindly loaned material.

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Bulletin of the

British Ornithologists' Club

Edited by
Dr J. F. MONK

Volume 108 No. 3 September 1988

FORTHCOMING MEETINGS

Tuesday, 8 November 1988 at 6.15 pm for 7 pm in the Senior Common Room, Sherfield Building, Imperial College, S.W.7. **Dr Gérard J. Morel** will speak on **"Paradoxical Sahel: rich wetlands surrounded with arid bush steppe".** Those wishing to attend should send their acceptance with a cheque for £5 to reach **Mrs AMBERLEY MOORE** at 1 UPPINGHAM ROAD, OAKHAM, RUTLAND LE15 6JB (telephone 0572 2788 or 01-427 8864) not later than first post on Tuesday, 25 October, if possible*.

We are delighted to welcome Dr Morel, internationally known for his work in West Africa and joint author of *A Field Guide to the Birds of West Africa*.

Tuesday, 6 December 1988 at the same place, 6.15 p.m. for 7 p.m., **Dr Michael Rands** will show **a film of Yemen and speak on "Birds in Yemen and S.W. Arabia and their conservation".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach **Mrs AMBERLEY MOORE** (address above) by first post on 22 November 1988, if possible*.

Dr Rands is Project Director of the I.C.B.P. and Chairman of the Ornithological Society of the Middle East and this Meeting is being held with the cooperation of the O.S.M.E.

Tuesday, 7 February 1989 at the same place, **Dr Algirdas Knystautas** will speak on **"Birds of the Soviet Union".**

Tuesday, 14 March 1989 at the same place, **Dr Werner Suter** will speak on **"Cormorants wintering in Switzerland".**

Tuesday, 9 May 1989 at the same place, **Dr Robin Cox** will speak on **"North Sea Birds".**

*It will be possible to take acceptances up to the weekend before a Meeting, but Members are asked to accept by 14 days before a Meeting, if they possibly can, to avoid a number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

A plan showing Imperial College will be sent to Members who request it when sending in their acceptance for a Meeting.

Bulletin of the BRITISH ORNITHOLOGISTS' CLUB

Vol. 108 No 3 Published: 19 September 1988

The seven hundred and seventy-ninth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London SW7 on Tuesday, 10 May 1988 at 7 pm. The attendance was 25 Members and 18 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), M. A. Adcock, R. C. Beecroft, P. J. Belman, Mrs Diana Bradley, D. R. Calder, Dr R. A. F. Cox, J. H. Elgood, H. S. Gibbons, A. Gibbs, D. Griffin, S. Howe, R. H. Kettle, Dr C. F. Mann, Dr J. F. Monk, Mrs Amberley Moore, R. G. Morgan, Mrs M. N. Muller, J. G. Parker, R. E. F. Peal, R. E. Scott, P. J. Sellar, N. H. F. Stone, C. E. Wheeler and M. W. Woodcock.

Guests present were: Mrs B. E. Adcock, D. Bradley, Dr J. D. Bradley, P. Bull, Mrs J. B. Calder, Dr E. K. Dunn, Mrs Jean Edrich, Mrs F. M. Farnsworth, C. Gibbons, Mrs M. C. Gibbons, Jane Gough, S. Jones, Mrs Isabel McCulloch, P. J. Moore, R. Sattertwaite, Mrs Ann Scott, Dr P. Viette and Mrs B. J. Woodcock.

Dr E. K. Dunn spoke most interestingly on "A Year in the Life of Terns". He discussed a number of the factors involved in the breeding of most European tern species. He then discussed, with considerable insight, the human predation in winter quarters off West Africa of species with British breeding populations and described measures that were being taken to reduce it.

The seven hundred and eightieth Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Tuesday, 7 June 1988 at 7 p.m. The attendance was 20 Members and 20 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), R. C. Beecroft, P. J. Belman, Mrs D. M. Bradley, D. R. Calder, I. D. Collins, M. J. Crosby, J. H. Elgood, H. S. Gibbons, A. Gibbs, R. H. Kettle, Dr C. F. Mann, Mrs Amberley Moore, Dr J. F. Monk, R. E. F. Peal, Miss S. Sassoon, R. E. Sharland, N. H. F. Stone, A. R. Tanner and Dr A. Tye.

Guests present were: D. Bradley, Dr J. D. Bradley, P. Bull, Mrs J. B. Calder, J. Chappell, Mrs P. Chappell, L. Clarke, Mrs F. M. Farnsworth, Mrs Jean Edrich, C. Gibbons, Mrs M. C. Gibbons, Dr P. J. Jones, Mrs Isabel McCulloch, P. J. Moore, Dr A. Padel, Mrs Claire Padel, R. Ranft, Mrs M. Southgate, Dr V. Southgate and Mrs Hilary Tye.

Dr Alan Tye spoke on "The Islands of São Tomé and Príncipe and their Birds", describing the visit there of himself and Dr P. J. Jones for the I.C.B.P. from 18 July to 14 August 1987. He explained their geography and climate and gave information on the status of endemic and other landbirds of particular interest. He held out hope that rare endemics, which had not been recorded for many years, might still survive in areas which he and Dr Jones had been unable to visit because of heavy rainfall and dense forests.

The seven hundred and eighty-first Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 on Monday, 11 July 1988 at 7 p.m. The attendance was 26 Members and 22 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), Miss H. Baker, P. J. Belman, Mrs D. M. Bradley, D. R. Calder, Dr R. A. Cheke, P. J. Conder, Dr H. Q. P. Crick, J. H. Elgood, Sir Hugh Elliott, Dr C. J. Feare, R. S. R. Fitter, A. Gibbs, B. Gray, H. S. Gibbons, T. R. Mills, Dr J. F. Monk, Mrs Amberley Moore, R. E. F. Peal,

P. J. Robinson, R. E. Scott, R. E. Sharland, N. H. F. Stone, A. R. Tanner, D. Tutt and M. W. Woodcock.

Guests present were: Revd. E. Back, Mrs J. Back, Dr R. J. Baker, Mrs Z. Ballard, Dr J. D. Bradley, P. Bull, Mrs J. B. Calder, Lady Elliott, Dr C. C. H. Elliott, G. D. Elliott, Mrs M. S. Fitter, C. Gibbons, Mrs M. C. Gibbons, Mrs Isabel McCulloch, Dr Amicia Melland, Mrs D. C. Monk, P. J. Moore, T. Parmenter, S. Pringle, Mrs Ann Scott, Mrs Mary Seton-Watson and Mrs B. J. Woodcock.

Dr Clive Elliott spoke on "The Quelea Problem in Africa" and an abstract of his address will be published later.

The undescribed female of *Euphonia xanthogaster cyanonota* Parkes

by Kenneth C. Parkes

Received 10 September 1987

Dr Robert W. Dickerman recently requested from me a list of the Carnegie Museum of Natural History material of the Rufous-bellied Euphonia *Euphonia rufiventris*. Within this series, which I had not previously had an occasion to examine, 2 female specimens stood out as differing in several respects from the others; their bills were smaller, they lacked reddish-brown under tail coverts, and they had a buffy wash on the lower abdomen. It became evident that these 2 specimens, from Arimã, Rio Purús, Brazil, had been misidentified, and were in fact examples of the Orange-bellied Euphonia *Euphonia xanthogaster*. Furthermore, they represented the hitherto undescribed female of the subspecies *E. x. cyanonota* Parkes (1969, *Bull. Brit. Orn. Cl.* 89: 17). I therefore took these specimens to the American Museum of Natural History to compare them with females of *E. x. dilutior* Zimmer of northeastern Amazonian Peru, from which I had separated *cyanonota*.

Four females of *dilutior* were available, from Puerto Indiana, Orosa and Lagarto (2). Within the genus *Euphonia*, females often display more striking subspecific characters than do males, but this is not true of the 2 races under consideration here. The 2 females of *E. x. cyanonota* are closely similar to those of *dilutior*, but have the blue-grey area of the nape extending onto the posterior part of the crown. The yellow-green chin spot is slightly more extensive posteriorly, and the pinkish-buff of the abdomen is less extensive anteriorly and more abruptly differentiated from the grey of the breast than in *dilutior*, in which the breast is lightly washed with the pinkish-buff of the abdomen. There is no difference between the races in the colour of green of the dorsum or the yellow-green of the flanks.

Address: Dr K. C. Parkes, The Carnegie Museum of Natural History, Section of Birds, 4400 Forbes Avenue, Pittsburgh, PA 15213, USA.

Range extension of the Red-fan Parrot *Deroptyus accipitrinus* in Amazonian Brazil

by Leo Joseph

Received 24 October 1987

On 9 February 1986, at c. 1 km from the settlement of Jaçiparaná at the crossing of the Rio Jaçiparaná, a right-bank tributary of the Rio Madeira, c. 60 km SW of Porto Vêlho, Rondônia, Brazil, (Figs. 1, 2) I watched 3 *Deroptyus accipitrinus* for one hour. The locality is c. 720 km NW of Juruena and c. 200 km SW of the confluence of the Rio Jiparaná and Rio Madeira.

Distinctive features were the short black primaries, green wings, rump and tail, the latter seeming to have a dark terminal band; purple and blue underparts and hindneck; head ground colour brown, heavily streaked pale cream, especially on the crown; frons and lores blackish, iris creamy. In size they were about that of an *Amazona* parrot but noticeably less stocky. No other parrot with conspicuously purple and blue underparts is known to occur in Amazonian Brazil, while the green upperparts, pale iris and raised nuchal ruff seen momentarily in one individual once, further render the identification secure. Indeed the crown being heavily streaked with pale cream is indicative of the subspecies *D. a. fuscifrons*, which occurs south of the Amazon (Forshaw 1977). At the time, I did not consider the sighting exceptional and so made no further notes.

The habitat in the immediate area was flooded forest. Nearby areas could be described as disturbed terra firma rainforest with scattered areas of land being used for agriculture. The birds were feeding in an unidentified tree growing in the waters of the Rio Jaçiparaná, stripping the outer, dark covering of the leaf petioles. Evidently, they were eating this dark covering because only the inner, light-coloured parts of the petioles were seen falling to the river below.

Figure 1. Map of northern South America showing the distribution of *D. accipitrinus* based on Forshaw (1977). The locality of the sighting reported here is indicated thus ◆. The boxed region is shown in more detail in Figure 2.

Figure 2. Map of central and western Amazonian Brazil south of the Amazon showing geographical features mentioned in the text. Rivers are indicated by unbroken lines, State borders in Brazil are indicated by —·—·— and international frontiers by —··—··—. The locality of the record discussed here is indicated by a star.

Pinto (1978) noted that, south of the Amazon, *D. accipitrinus* occurs south and east of the lower Rio Madeira. Meyer de Schauensee (1966), Ridgely (1981) and Sick (1984) were more restrictive, stating or implying that, south of the Amazon, *D. accipitrinus* occurs west only as far as the Rio Tapajós, and south into the upper drainages of the Tapajós and Xingu in northernmost Mato Grosso. They therefore excluded the lower Madeira from the range. Forshaw's (1977) review essentially follows the latter 3 authors. *D. accipitrinus* is at present unrecorded from anywhere in Acre or the upper Rio Juruá or Rio Purús regions of western, Amazonian Brazil or from southeastern Perú (Gyldenstolpe 1945, 1951 per J. Remsen, Parker *et al.* 1982). The species is also unrecorded from Bolivia (Remsen & Traylor, in press).

Two specimens in the Museu Nacional, Rio de Janeiro (MN4071, 4072), are from Passo do Susto, Juruena ("Juruema" on the labels), western Mato Grosso (D. M. Teixeira). Field parties from the Field Museum of Natural History found *D. accipitrinus* to be common along the Rio Jiparaná in Rondônia in 1986 in June and September, October, November and have lodged 3 specimens in the Museu de Zoologia da Universidade de São Paulo (S. M. Lanyon, D. F. Stotz). These 5 specimens are from the most southwestern localities that I have been able to find for *D. accipitrinus*.

The present record, from the middle Rio Madeira region, is a southern and western range extension from, respectively, the lower Madeira and northern Mato Grosso, the distances involved being 500–700 km, the

first record of the species from the State of Rondônia and only c. 100 km from Bolivia, opening up the possibility that *D. accipitrinus* occurs in the northern, Amazonian parts of that country.

Acknowledgements

This paper has been improved enormously by the comments on earlier drafts and freely offered assistance with literature and museum records given me by J. M. Forshaw, J. V. Remsen, J. W. Fitzpatrick, D. M. Teixeira, R. Ridgely, S. M. Lanyon and D. F. Stotz. To them all, I express my thanks. I accept responsibility for the views expressed here. My wife, Domitilia, and Colleen Kelly assisted in the preparation of this note.

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Notes on the status and ecology of the Ogea Flycatcher *Mayrornis versicolor*

by Dick Watling

Received 3 November 1987

The sole collection of the Ogea Flycatcher *Mayrornis versicolor* was made by the Whitney South Sea Expedition during its visit to Ogea in Fiji's southern Lau Group (19°10′S, 178°25′W), 26 Jul–4 Aug 1924. It was subsequently described by Mayr (1933).

Since that visit there have been no reports of any ornithologist visiting Ogea and the absence of any contemporary knowledge of this flycatcher's status was giving rise for concern. In addition, Ogea has suffered damage from 4 tropical cyclones in recent years (1973, 1975, 1979, 1985), but perhaps most disturbing has been the possibility of exploitation of Ogea's proven phosphate resources (Ministry of Lands, Energy & Mineral Resources, Fiji Government). Of considerable further interest was the overall status of the Ogea Flycatcher in view of its suspected

hybridisation with a congener the Slaty Flycatcher *M. lessoni* (Mayr 1933).

I visited Ogea (Fig. 1) from 26 Jul to 23 Aug 1986, carrying out limited mist-netting (15 mist-net days) and spent just under 62 hours on field transects, mostly between 0630 and 1100 hrs. Whilst at Ogea, I spent 2 days on Ogeadriki, and one on Dakuiyanuya, the remaining fieldwork being carried out on Ogealevu. I also surveyed the neighbouring islands of Namuka on 25 Jul, Vulaga 5–6 Aug, and 3 islands of the Yaqasa Cluster 1–4 Aug.

Ogea

Ogea consists of 2 principal islands, Ogealevu (13.3 km^2) and Ogeadriki (5.2 km^2), situated 2 km apart, to the north and south of a lagoon which contains numerous small limestone islands and outcrops. Dakuiyanuya (c. 2 km^2) lies 250 m southwest of Ogealevu from which it is separated by many small outcrops and sandflats which are exposed at lowtide.

The islands are limestone, of raised coral origin, and the highest point (on Ogealevu) is 82 m. A single village with a population of 120 is located on Ogealevu but much of the agricultural land is on Ogeadriki. Both islands are heavily forested, with less than 10% of the land area converted to coconut plantations and agricultural land (calculated from 1982 aerial photographs). The forest itself is rich in certain valuable timber trees, particularly *Intsia bijuga* and *Calophyllum* sp. These are felled by the villagers for house timber, for traditional handcrafts and for the construction of outrigger sailing canoes, a traditional skill for which the islanders are justly renowned throughout Fiji. Timber felling is restricted by access difficulties, as the terrain over both the major islands is very rugged, weathered limestone. (See Fig. 2.)

Forest structure is not uniform, areas with more soil having a distinct and sometimes thick substage or herb/shrub layer. Where soil is minimal or lacking, there is very little growth below the canopy, making movement comparatively easy, the rough terrain apart. The southern, and especially eastern, aspects are exposed to the southeast tradewinds for much of the year and in the elevated positions particularly, the forest is stunted or replaced by a wind-battered scrub layer.

There is no standing water on the islands and the agricultural soil resources are strictly limited, the main areas already exhausted.

Distribution of the Ogea Flycatcher

Hitherto the Ogea Flycatcher has been regarded as a single island endemic because the Whitney Expedition collected it only on Ogealevu. During my survey, I found the Ogea Flycatcher on both Ogeadriki and Dakuiyanuya in addition to Ogealevu.

The 1924 Whitney Expedition anchored off Ogeadriki 27–29 Jul before moving across to Ogealevu, where they worked ashore 30 Jul–3 Aug (Bryan 1924: 196–210). If the Flycatcher was present on Ogeadriki and at the same density as it is today, and the Expedition's collectors worked there for 3 days, they would surely have encountered it; but for unknown

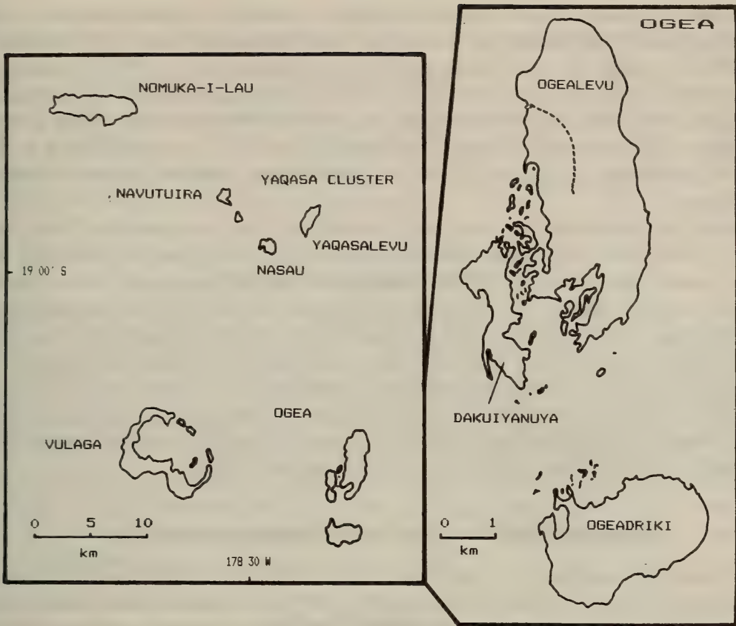

Figure 1. Ogea and surrounding islands in Fiji's Southern Lau Group (Dashed line–census transect).

reasons they did not collect specimens of any bird species there (Watling 1985). Only a few observations from Ogeadriki (and none of the flycatcher) were recorded in the journals of the principal collectors, Rollo Beck and José Correia and the botanist-entomologist Edwin H. Bryan Jr. Without recognising the Flycatcher as a new species, the Whitney collectors made no special search for it, and just one mention of it is made in Beck's journal (see below).

Unfortunately, it is therefore impossible to conclude whether or not the presence of the Ogea Flycatcher on Ogeadriki represents a recent range expansion. Similarly, no specimens were collected from, or ornithological journal entries made, for Dakuiyanuya (Yanuia in Bryan's journal p. 210) by the Whitney Expedition.

I did not find the Ogea Flycatcher on the neighbouring islands of Namuka, Vulaga or the Yaqasa Cluster, despite searching in an abundance of apparently suitable habitat.

Population

Censuses were run 0630–1030 hrs on 4 separate mornings, along the same transect (Fig. 1), an existing but little used track which cut diagonally across from the island's centre to the northwest coast. There were small areas of disturbance from timber felling at both ends of the transect,

otherwise it crossed undisturbed forest, probably representative of the island's forest vegetation as a whole, although this was not verified. I used the Variable Strip Transect Method (Emlen 1971, 1977, Ramsey & Scott 1981) and the population estimate was made using observations within a 30 m strip on either side of the 1600 m transect. The average number of flycatchers seen per transect was 10.25, representing a density of 10.68 per 10 ha or 1780 for the forest habitat of the 3 islands combined.

Given the nature of the terrain, brevity of the censuses and the possibility of habitat and inter-island differences in flycatcher density (see below), one cannot place great confidence regarding accuracy in such a population estimate. Furthermore, it appears likely that breeding was taking place at the time of the censuses and some birds may have been incubating (see below). Making an adjustment for singletons actually representing pairs, the population estimate is raised to 2330. Even though there is a tendency for transect censusing to underestimate populations (Bell & Ferrier 1985), one might best conclude for the Ogea Flycatcher population a figure in the order of 2000.

Habitat preferences and foraging behaviour

The Ogea Flycatcher is restricted to forested habitats and does not venture out into the limited areas of open cultivated land and village fringes. Within the forest, my subjective impression was that the flycatcher was more commonly found at the forest edge around clearings or fallen/felled trees and perhaps also in successional forest. More intensive work would be required to confirm these impressions. However, they concur with an observation recorded by Rollo H. Beck (1924: 54) when referring to both the Slaty and Ogea Flycatchers "grey Fantails [Slaty Flycatcher] are more rare than brown ones [Ogea Flycatcher] and live in the older parts of the forest". I also more commonly encountered it in forest areas with a well developed substage.

Whereas successional and edge habitats are of limited extent, areas of sparse substage within the forest are believed to be extensive and as such the population estimate above could be greatly affected. Similarly, the rate of encounters with Ogea Flycatchers was lower on Ogeadriki (1.3/hr) and Dakuiyanuya (0.3/hr) than on Ogealevu (2.3/hr).

The Ogea Flycatcher is a rather generalised forager, but is primarily a foliage gleaner at any height, from the ground layer to the canopy. The foraging behaviour of both Fijian species of *Mayrornis* is similar to that of fantails and more especially sylviine leaf-warblers, neither species being the true flycatchers their commonly used English names would suggest. Whilst working its way through the foliage, the Ogea Flycatcher's tail is often gently spread and sometimes cocked with the wingtips slightly lowered. Occasional sallies after insects usually terminate on a different branch from that from which they originated. Rarely, they flutter fantail-like against the foliage to dislodge insects. They were also observed probing into bark fissures and working up large branches and lianas entwining a trunk. Table 1 summarises foraging data.

TABLE 1

A summary of data on foraging behaviour of the Ogea Flycatcher *Mayrornis versicolor*.

Height			Foraging medium		Activity		
Canopy	Mid-height	Ground	Leaves	Woody	Gleaning	Aerial	Other*
37 (43)	38 (44)	11 (13)	56 (80)	14 (20)	74 (86)	7 (8)	5 (6)

Notes. Number given is of observations of foraging birds, percentage in parentheses.
*Includes 'leaf or trunk snatching', probing.

Foraging associates

Whilst foraging, the Ogea Flycatcher is frequently observed in the vicinity of other foraging passerines, of which there are 7 in the forest on Ogea. By far the most common associate is the Vanikoro Broadbill *Myiagra vanikorensis*, a typical monarch flycatcher. Of the 63 observations when one or more Ogea Flycatchers were recorded, other species were in the near vicinity (<25 m) on 24 (38%) of the occasions; the broadbill (16 observations), Golden Whistler *Pachycephala pectoralis* (4), Fiji Shrikebill *Clytorhynchus vitiensis* (2), and once each the Wattled Honeyeater *Foulehaio carunculata*, Polynesian Starling *Aplonis tabuensis* and Slaty Flycatcher.

Calls. Breeding

The Ogea Flycatcher is commonly vocal, 60% of first detections on transects were by sound rather than sight. A mild but carrying '*tsic*' frequently repeated, is the normal call. When agitated this becomes more rapid and harsher, sometimes transforming into a single note before trailing off. Another frequent call is a double, or a short series of '*tsic*', followed by a brief upslurred whistle, sometimes repeated once or twice. All the Ogea Flycatcher's vocalisations heard are of a very similar character to those of the Slaty Flycatcher.

Ogea Flycatchers were most frequently encountered in pairs (50% of observations) followed by singletons (43%) and others–3, 4 or 5 together (7%). I saw no breeding activity until my penultimate day of fieldwork, when I observed a very recently fledged, dependent young. It was clear that many pairs were holding territories, as they would be seen in the same locations day after day and several agonistic encounters were observed. Although I had seen no breeding activity, it seems possible that it was, in fact, well advanced and that many of the singletons seen represented pairs with one bird on the nest. Other forest passerines including Wattled Honeyeaters, Golden Whistlers and Fiji Shrikebills were breeding at the time. However, the gonads of all the Ogea Flycatchers collected by the Whitney Expedition, with the exception of 2 (unrecorded), were small. Both our visits were during the same months, July and August.

The Slaty Flycatcher and hybridisation

As Mayr (1933) pointed out, the sympatric occurrence of these congeners on a very isolated island (group) is of great biological interest, and the

consequence of hybridisation, if it is occurring, could be the eventual disappearance of the Ogea flycatcher, the Slaty Flycatcher having the wider range of the 2, and though uncommon in Ogea and absent on Vulaga it is common on the 3 islands of the Yaqasa Cluster (17–20 km to the north of Ogealevu) which I visited. These observations are consistent with those of the Whitney Expedition in 1924. Mayr's evidence for hybridisation was 2 specimens (AMNH 251204 & 251308) of Slaty Flycatcher from Ogealevu, with plumage anomalies which carried distinctive characteristics of the plumage of the Ogea Flycatcher. My own examination revealed another similar specimen No. 251206. No such anomalies are present in the Ogea Flycatcher series. The Whitney Expedition was able to collect equally as many Slaty as Ogea Flycatchers (14/15) on Ogealevu, indicating (despite Beck's observation in his journal–see above) that both species were reasonably common.

During my present survey, I saw not a single Slaty Flycatcher on Ogealevu until my 14th day of fieldwork there, and the pair seen then proved to be the sole sighting; in contrast, I saw a single Slaty Flycatcher on Ogeadriki on the first morning of my 2 days there, though I saw no others. It seems clear that the Slaty Flycatcher is now very rare on Ogealevu, as it is not a bird which can be easily overlooked, the Lau race, at least, being bold and conspicuous and readily attracted to any disturbance and artificial 'shushing' calls.

The sole Slaty Flycatcher seen on Ogeadriki was observed in the company of an Ogea Flycatcher, but they were not obviously behaving as a pair.

Mayrornis is a genus of Fijian origin, but of uncertain immediate affinities. Formerly classified as Rhipidurine fantails (which on grounds of behaviour is not totally inappropriate), the current Monarchine position is adopted here on the basis of morphology and the nest structure (pers. obs. of both races of *M. lessoni*). Of the 3 species in the genus, 2 have very restricted ranges, *M. versicolor* the most specialised of the group, and *M. schisticaeus*. The latter is similar in size and plumage colour to *M. lessoni* and is one of only 3 species of Fijian origin which have managed to colonise the Solomon's Santa Cruz islands (though not the closer islands of Vanuatu), the others being *Clytorhynchus nigrogularis* and *Aplonis tabuensis*.

The widest spread member of the genus is the Slaty Flycatcher, which has been recorded on over 50 islands in the Fijian archipelago (Watling 1985 & unpubl.). On size grounds it is clearly separable into 2 races. *M. l. orientalis* is confined to Fiji's eastern Lau Group and is larger and more robust than the nominate subspecies (c. 10% larger linear measurements–Table 2). In the absence of weight data for *M. l. orientalis*, I estimate it to be about twice the weight of the Ogea Flycatcher, with which it is sympatric on Ogea. In contrast the allopatric nominate subspecies *M. l. lessoni* has similar linear measurements to *M. versicolor* although it is more robust and heavier.

Ogea is the only island (group) which has been successfully colonised by 2 waves of *Mayrornis* immigration. As the endemic species and the most divergent member of the group, it is more probable that the Ogea Flycatcher stock was the original colonist, while the larger and more

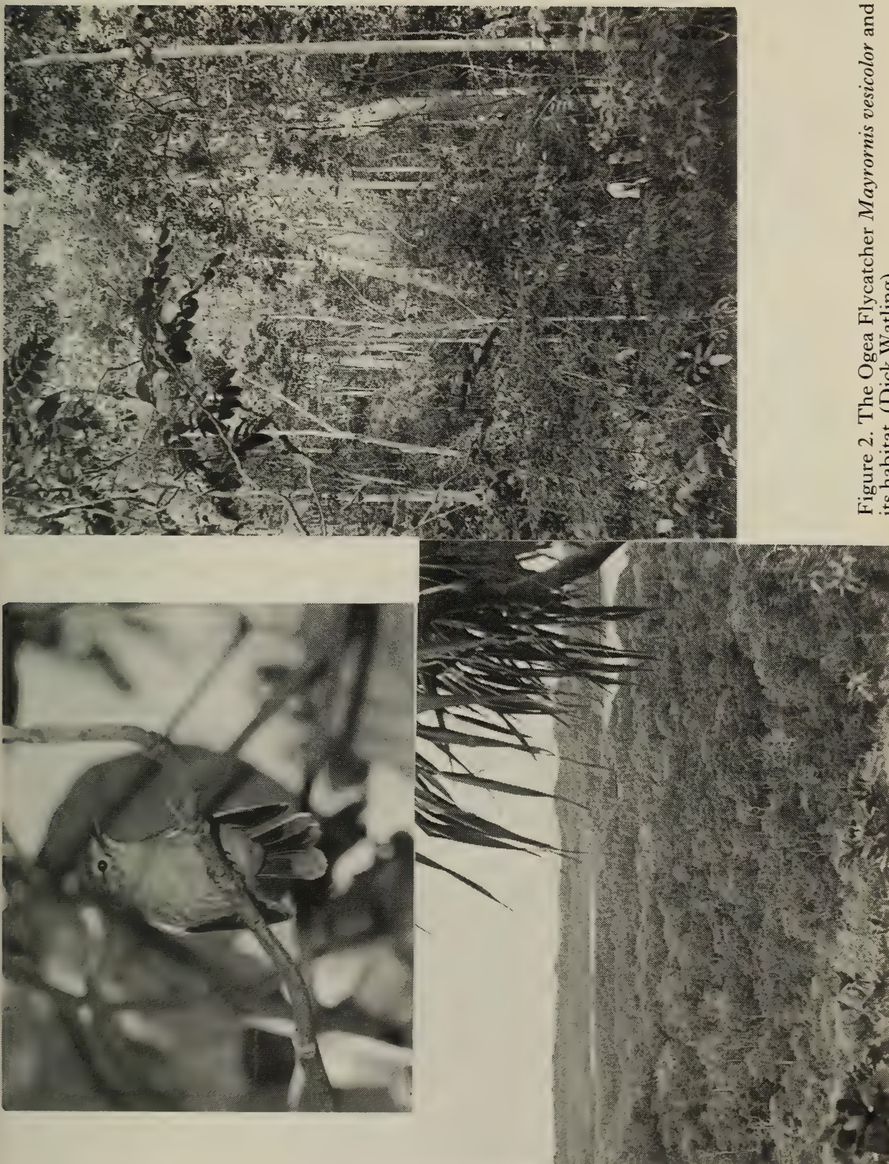

Figure 2. The Ogea Flycatcher *Mayrornis vesicolor* and its habitat. (Dick Watling).

TABLE 2

Average weights (g) and measurements (mm) for *Mayrornis* flycatchers. All measurements are derived from Mayr (1933), and weights (n=sample size, sexes not distinguished) from this study and Watling (unpubl.).

		Wing	Tail	Culmen	Weight
M. l. lessoni	male	68.9	59.2	14.9	11.2
(Central Fiji)	female	65.4	55.8	14.4	(n=13)
M. l. orientalis	male	75.7	67.2	17.7	—
(Lau Group)	female	72.1	64.4	17.0	—
M. versicolor	male	69.7	60.1	14.9	8.7
(Ogea)	female	66.4	58.2	14.4	(n=2)
M. schistaceus	male	70.4	61.5	16.8	—
(Santa Cruz)	female	67.1	59.7	16.0	—

widespread *M. l. orientalis* arrived later. The evolution of the *Mayrornis* species appears to stem from a *M. l. lessoni*-type ancestor which evolved in the central Fijian island land mass and then dispersed widely, managing to colonise Santa Cruz to the northwest, and Ogea to the southeast in the islands of the Lau Group. Elsewhere in this part of its range, in the absence of strong competition in the simple, small-island avifaunas, the larger generalist form (*M. l. orientalis*) evolved, and subsequently reinvaded Ogea and other Lau islands, though, nonetheless curiously and inexplicably, is absent from several large islands of Lau (Mayr 1933, Watling 1985). On Ogea a distinctive population of the original colonist evolved, having apparently diverged sufficiently to nullify very occasional hybridisation with the second wave of colonists. Indeed the evidence indicates that it may even be that the larger Slaty Flycatcher is the species which is losing ground, but this needs confirmation. What is more likely is that sympatry has, and is, continuing to reinforce the divergence of *M. versicolor* from its ancestral condition, with decreasing size and especially with the evolution of a species-specific plumage. What is not known and is of considerable interest is whether the first 'wave' of *Mayrornis* colonised islands of the Lau Group in addition to Ogea, where the populations have subsequently been lost as a result of competition from the second wave of colonists.

It is interesting to note that the Ogea Flycatcher has not evolved in a manner similar to that of many isolated island endemics, such as an increase in size, progressive drabness of plumage colouration and loss of flight proficiency. The presence of a competing congener could account for this, if their sympatry is of longstanding. In common with many island endemics, it has, however, poor powers of dispersal, otherwise it would have colonised Vulaga, 10 km distance, where the Slaty Flycatcher is absent.

Conservation status

The present conservation status of the Ogea Flycatcher must be viewed with some optimism. Its status can be described as common on Ogealevu at least. There are no indications that the recent series of tropical cyclones have greatly affected Ogea's forests or the Flycatcher population.

Nonetheless, a population of only c. 2000 (if the estimate is acceptable) would always remain vulnerable to chance catastrophes. The finding of the Flycatcher on Ogeadriki, a well separated and uninhabited island, is a major conservation asset. However, because of Dakuiyanuya's proximity to Ogealevu it should not be considered a separate island for conservation purposes.

The Ogea Flycatcher is strictly a forest bird and would be vulnerable to forest clearance; this, however, is unlikely to occur because much of both islands have insufficient soil resources for agriculture and even coconuts do not thrive. It is probable that selective timber felling for traditional handcrafts and house construction will increase, but overall this is unlikely to affect the Ogea Flycatcher population, while detailed study might possibly show that the consequent increase in secondary growth could actually improve its habitat.

The population of Ogea's single village has increased from about 80 at the time of the Whitney Expedition's visit in 1924 (Bryan 1924: 205) to about 120 today. It is not, however, a thriving community; there is a strong drift to mainland Fiji where many of the youth are currently studying. The opportunities for land-based development on Ogea are strictly limited by its poor agricultural potential and very rugged terrain.

The known phosphate resource is restricted to Ogeadriki and is of low grade; it is considered a marginal resource at present, but its potential for exploitation will, however, remain (J. Lum, Mineral Resources Dept., Government of Fiji).

Potential predators of the flycatcher include Swamp Harriers *Circus approximans*, Barn Owls *Tyto alba* and feral cats, the latter present and probably common in the forest on Ogealevu; however, their presence on Ogeadriki was not confirmed. Only *Rattus exulans* was found on the islands, but further trapping would be needed to confirm the absence of *R. rattus* and *R. norvegicus*.

While hybridisation with the Slaty Flycatcher may be occurring, there was no evidence for it in the field and it seems most improbable that it could be threatening the Ogea Flycatcher population. It is clear that the Slaty Flycatcher is now rare on Ogealevu, having apparently declined since the visit of the Whitney Expedition over 60 years ago. Its decline, if real, indicates a dynamic situation, possibly implying that the invasion of Ogea by *M. l. orientalis* is a comparatively recent event, having taken place presumably from the islands of the Yaqasa Cluster to the north, where it is common. However, *orientalis*'s absence from several large islands in the Lau Group and in particular from Vulaga, which has a similar geology and flora to Ogea and is a similar distance from Yaqasa (see Fig. 1), indicates, to the contrary, that *orientalis* is not dispersing aggressively at present, so that its extinction on Ogea is a more realistic possibility.

In the absence of the Slaty Flycatcher, Vulaga has great conservation significance, in that it is certainly a potential translocation island for the Ogea Flycatcher if a critical situation should arise on Ogea, even though this is not evident at the present time.

Not only is the situation on Ogea of great biogeographical interest but the population dynamics of a species such as the Ogea Flycatcher, with a naturally small population in a restricted range, subject to frequent

cyclonic disturbance, is of wider conservation significance, and certainly worthy of more detailed study.

Acknowledgements

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Additions and corrections to the avifauna of Zaïre (3)

by M. Louette

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These comments are a follow up of 2 earlier parts (Louette 1987, 1988).

Platalea leucorodia

This species is not mentioned specifically for Zaïre by Brown *et al.* (1982), but Lippens & Wille (1976) say "se rencontre au Zaïre de temps en temps, mais très rarement"; in fact Lippens (1938) had observed a bird on 17 January and collected a specimen on 22 Apr 1936 at Vitshumbi (Lake Edward: 0°42′S, 29°25′E), the latter still in existence in Koninklijk Museum voor Midden-Afrika (KMMA). This appears to be the southernmost locality recorded for the species. There is also a second specimen,

collected at Titule (3°17′N, 25°32′E) on 8 Jan 1942 by Vrijdagh (see Schouteden 1963).

Streptopelia turtur

That this Palaearctic migrant was seen only once in Zaïre (at Avakubi) as mentioned by Lippens & Wille (1976) and mapped by Urban *et al.* (1986) is wrong. There are 3 specimens in KMMA, all immatures: from Keseki (2°07′S, 16°32′E), taken in 1931, from Boangi (1°53′S, 20°57′E), taken about 1953 and from Lulingi (9°20′S, 27°36′E) taken on 9 Oct 1963.

Tockus fasciatus and *T. alboterminatus*

These are undoubtedly 2 separate species although they are parapatric in southern Zaïre; there is however a specimen, sexed male, from Kabambare (Maniema: 4°40′S, 27°40′E), 25 Jul 1910, that I consider to be a hybrid between the 2 species. Dorsally it is closest to *fasciatus*, being blackish generally, but at the tip of the crest there appears some white, indicating probably the white patch present there in the other species. Ventrally it is intermediate in colour; whereas *fasciatus* has a black breast and a white belly, this specimen has these colours washed with brownish orange, but not to the extent as is usual in skins of *alboterminatus geloensis*, the race found in southern Zaïre. The white tips of the tail feathers are larger than in *alboterminatus* but smaller than in most *fasciatus*. Also the bill (though it is now more than 75 years after the date of collection) is quite orange in general colour, which is not typical of *fasciatus*. There is however a black line under the lower mandible, as in *fasciatus*. The specimen's measurements are (mm): wing-chord 261, tail 239, total culmen 84, within the range of both species.

Apalis goslingi

The atlas map in Hall & Moreau (1970) gives the impression there exists a gap between the recorded occurrences of this species in the west in Cameroon (and also in Gabon–Brosset & Erard 1986) and in southern and eastern Zaïre. However, there are 5 specimens in KMMA, from the Equateur region bridging the gap: Bolunga (0°24′S, 21°53′E); Imbele (0°56′S, 22°52′E); Elongo/Nkombi (0°18′S, 21°31′E); River Isojdjo (0°04′S, 18°18′E); Monieka (0°41′N, 19°57′E).

Ploceus superciliosus

I follow Moreau (1962) in using the name *superciliosus, contra* Mackworth-Praed & Grant (1973). This weaver has a brownish non-breeding dress with a uniformly pale (washed cinnamon) ventral side; dorsally, dark brown colour stretches in a broad band over the head, right to the bill (see Plate XI(10) in Benson *et al.* 1971). In breeding dress the throat becomes black, the breast generally yellowish; on the dorsal side some green is interspersed in the streaky brown. Sexual difference in breeding dress is apparent in the head colour only: in the female the same general pattern as in the eclipse dress is prevalent, but the pale cinnamon is replaced by yellow and the central crown band is now greenish-black; while the male assumes a yellowish frontal half of the crown, edged with

orange-brown towards the bill so that the dark band starts only on top of the head and continues towards the back. This sexual difference occurs in most of the range, but some authors have had problems recognising the annual and sexual differences (e.g. Dubois 1905, Lippens & Wille 1976, legend to Plate 82 in Mackworth-Praed & Grant 1973).

In the populations of southern Zaïre (Kasai and western Shaba, possibly also in Lower Zaïre, see Fig. 1), one phenotype only is found among the 28 specimens in KMMA in breeding dress, namely the male phenotype of the other populations; it seems unlikely that they are all males unless there was some reason for having collected only male specimens. I do not rely much upon the sex given on labels for the present study if no drawing of gonad size is given. I suspect that in this area on the contrary the male phenotype corresponds to both sexes. There are 2 other specimens, from Gandajika (Kasai), where the crown has the dark band, but as the throat and cheek black patches are not yet developed I assume this band still belongs to the eclipse plumage. Indeed, 2 other specimens, where the black throat and cheek patches are better developed, show an intermixture of yellow feathers in the crown band. Specimens from other regions show this latter process of moult towards the male phenotype as well.

A similar situation occurs in neighbouring countries. The Angola population is similarly described as monomorphic by Jackson (1938). Ripley & Heinrich (1966) mention 2 females and one male from there, but Rand *et al.* (1959), for Gabon and Congo, mention only the existence of "male" specimens, possibly because they were "sexed" on plumage characteristics only. I examined the Angola specimens collected by Heinrich (in Yale Peabody Museum and Smithsonian Institution collections) and found one from "Rio Kassai" and the other from "Lake Camumbo" duly sexed female after dissection, but both have the male phenotype with a yellow frontal region, proving my assumption for southern Zaïre. However, another female from north-central Angola, "25 km NW Nova Gaia" is in female phenotype with a black band right to the bill. This latter specimen, however, is the only female phenotype in skins of the whole population in this general area (specimens from Field Museum of Natural History have also been examined). The female recorded by Benson & Irwin (1964) from extreme northwestern Zambia is in non-breeding dress, as was apparently the specimen they mention from Ndala Tando, Angola. Male specimens (after dissection) from Angola have the male phenotype, as expected, as also is one from Djambala, Congo.

The situation in westernmost Zaïre is unclear: only 3 specimens in breeding dress are available, all in male dress. Somewhat more to the north, along the middle Zaïre river (Kunungu, $\pm 2°$S, 16°30′E) there are specimens of both the male and female phenotype and still others with the forehead and crown interspersed with some yellow feathers. This fits in the zoogeographical picture, because the Kunungu population is situated in the possible contact zone of monomorphic and dimorphic populations. These specimens however could as well be in the final stage of moult, whereafter they would acquire the complete male phenotype. Jackson (1938) even suspected that in East Africa male and female had the same

Figure 1. *Ploceus superciliosus*. Localities of specimens from Zaïre, Rwanda, Burundi, Zambia, Angola and Congo. The species occurs also in extreme northwestern Tanzania and widely in Uganda, Sudan and further west; also in Gabon. Open circles indicate the dimorphic populations, black circles the (supposedly) monomorphic population. Shading indicates equatorial rainforest block.

plumage (just as I consider it is now the case in southern Zaïre and northeastern Angola), but among specimens I have seen from East Africa, both phenotypes occur.

Fig. 1, based on all specimens examined and their localities (and those from Chapin 1954) illustrates the phenotype distribution in Zaïre and surrounding areas and it also corrects Hall & Moreau's (1970) map which shows too many records in the forested part of Zaïre, for which I am unable to trace the source in the literature. Later, Lippens & Wille (1976) mentioned *P. superciliosus* in Zaïre from Kwilu (±6°S, 19°E) and Dubois (1905) had mentioned a specimen from "Ruzizi-Kivu"(?), still in KMMA, but not included on the map. Fig. 1 shows clearly a circum-forest lowland distribution, the species not entering the equatorial forest belt as such and being also absent from the higher altitudes in eastern Zaïre. In neighbouring countries, it is widespread in Uganda, but in Tanzania is limited to the extreme northwest. The southern Zaïrean population is thus probably isolated from the East African birds. Along the middle Zaïre river however, as mentioned already, there is possibly a contact between northern and southern populations. It was shown for other species (see Louette & Prigogine 1982) that along this river there possibly existed a connecting path of non-forest vegetation. Also, since *P. superciliosus* is present in north-central Gabon (Brosset & Erard 1986) and in southern Cameroon (Louette 1981), regions not far from each

TABLE 1

Measurements in mm of *Ploceus superciliosus* populations (breeding dress specimens only).

Region	Phenotype	Wing-chord n	Wing-chord $\bar{x}$	Wing-chord range	Tail n	Tail $\bar{x}$	Tail range	Total culmen n	Total culmen $\bar{x}$	Total culmen range
Zaïre: N and NE of the equatorial forest and NW Uganda	male	12	69.0	67.5–71.5		43.4	40.0–46.0	(11)	17.9	17.5–18.5
	female	12	66.8	63.0–71.0		41.4	38.5–46.5	(10)	17.2	16.0–18.0
Zaïre: S of the forest (Kasai + Shaba only)	male[1]	28	69.5	65.5–74.5	(27)	43.2	39.5–46.5	(27)	18.4	17.5–19.5
Zaïre: *idem* (middle Zaïre area)	male	11	67.7	64.0–69.5	(9)	41.2	40.0–44.0		17.9	17.5–18.5
	female	4	64.5	63.5–66.0		41.4	41.0–42.0		17.5	17.0–18.0
Angola	male[2]	6	66.4	65.5–67.5		42.0	38.5–45.0		18.1	17.5–18.5
	female	1		66.5			43.0			17.5
Ethiopia	male	1		69.0			43.5			17.5
	female	3	65.0	64.0–67.0		39.2	36.0–42.0		17.3	17.0–17.5
Burundi, Tanzania	male	3	67.5	65.0–69.0		40.8	40.5–41.0		17.8	17.5–18.5
	female	4	66.8	64.5–70.0		41.1	39.0–42.5		17.8	17.5–18.0

[1]Sex mentioned on label: 13 male, 7 female, 8 unsexed. [2]Sex mentioned on label: 5 male, 2 female.

TABLE 2

Measurements in mm of *Spermophaga haematina* subspecies from West Africa and regions of Zaïre.

Subsp.	Region		n	Wing-chord $\bar{x}$	Wing-chord range	Tail $\bar{x}$	Tail range	Total culmen $\bar{x}$	Total culmen range
haematina	Liberia, Guinea	male	6	67.8	65.5–69.0	53.2	50.0–56.5	18.6	18.0–19.0
		female	6	66.3	63.5–68.0	51.7	50.0–54.0	17.3	16.5–18.0
pustulata	Lower Zaïre	male	10	69.7	68.0–71.5	53.4	51.5–56.0	17.8	17.5–18.0
		female	10	70.0	68.0–74.0	53.4	50.0–57.0	17.0	16.0–18.5
	Kasai	male	5	69.9	68.5–71.0	52.6	51.5–54.5	17.5	17.0–18.0
		female	5	70.1	69.5–71.0	52.2	48.5–58.0	16.5	16.0–17.0
ruficapilla	Kasai	male	5	70.1	66.0–74.5	57.5	55.5–59.5	18.1	17.5–18.5
		female	5	68.9	68.0–70.0	53.8	52.0–54.0	17.0	16.5–17.5
	Uele	male	10	71.6	68.0–75.0	55.1	53.5–59.0	18.7	18.0–19.0
		female	10	70.7	68.5–75.0	53.7	50.0–57.5	17.5	16.0–18.5
	Kivu	male	10	71.8	68.5–74.5	55.0	53.5–57.5	18.1	17.5–19.5
		female	10	70.6	69.5–72.5	53.5	48.5–56.0	17.9	16.5–19.5
Intermediates *pustulata*/ *ruficapilla*	Kasai, Kivu, Uele	male	4		69.0,69.0,70.0,73.5,		54.5,52.5,52.5,58.5,		18.0,18.5,18.0,18.5,
		female	3		66.5,67.0,72.5		52.5,51.0,55.0		18.0,17.0,17.5

other, there is also a possible contact in this latter region between southern and northern populations.

The measurements show the monomorphic populations of Zaïre and Angola to be only slightly larger, especially in bill length (Table 1), not justifying taxonomic distinction.

The breeding dress is worn in westernmost Zaïre from September to May; in south-central Zaïre (and northeastern Angola) October–June (June, one specimen); in northern Zaïre (and Cameroon) May–September; in eastern Zaïre (and Uganda) June–November (and in Ethiopia at least in May and June). However, surprisingly, the birds from Rwanda, Burundi and NW Tanzania (very close geographically to the ones in eastern Zaïre and Uganda) wear the breeding dress from January to April. The fact that southern and northern birds are breeding in opposite periods of the year would at first sight be helpful in maintaining reproductive isolation; but there is in fact no plumage difference nor measurement difference between birds from Zaïre and Uganda on the one hand and Rwanda, Burundi and Tanzania on the other (Table 1).

Differences in breeding season and in female plumage are not useful in separating given populations at the subspecific level, nor are there constant differences in eclipse plumage as supposed by Benson & Irwin (1964).

The species was described from West Africa, but 2 subspecies have been named: *pachyrhynchus* Reichenow, Semliki Valley, a race not now recognised; and *omoensis* Neumann, Omo Valley, the holotype of which is said to be larger, but the specimen cannot be found now (G. Mauersberger). I examined 4 specimens from Ethiopia (from the Smithsonian Institution collections, (see Table 1) and they do not differ from other populations; so the name *omoensis* is best considered as a synonym of *superciliosus*.

In view of all the above it seems best to consider *P. superciliosus* to be taxonomically a monotypic species. In general, females appear to be only slightly smaller than males and both sexes assume identical or near-identical breeding and eclipse dress. These facts demonstrate the peculiar morphology of this weaver. Therefore, the use of the generic name *Pachyphantes* or *Ploceella* may well be warranted (see Chapin 1954, Moreau 1960).

Spermophaga haematina (including *ruficapilla)*

The reasons for treating *Spermophaga haematina* and *ruficapilla* as conspecific are given hereafter. Chapin (1954: 482) considered them as 2 different species and he was puzzled by their relationship as he had "seen no intergradation between them, yet their ranges appear to be complementary" and he added "their haunts and behaviour are very similar and specimens should be collected between Yambuya and Banalia or between Luebo and Luluabourg, to determine the exact conditions where the two forms meet". Their ranges are indeed parapatric in Zaïre (see Fig. 2) but I have found several intermediate specimens from 3 contact areas (Kasai, Kivu, Uele), most of them collected after Chapin's day.

In fact, the colour pattern in this species changes in one continuous direction over its range which covers the whole equatorial forest block in

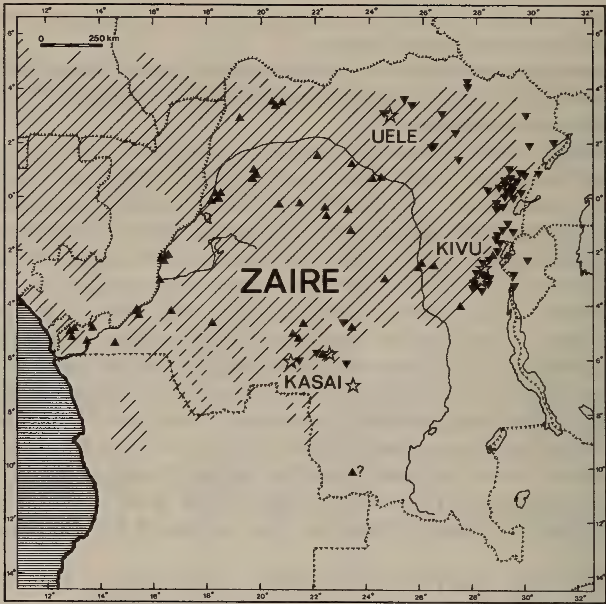

Figure 2. Localities of specimens from Zaïre, Rwanda, Burundi (specimens in KMMA).
▲ *Spermophaga haematina pustulata* (occurs also further west).
▼ *Spermophaga haematina ruficapilla* (occurs also in northwestern Angola).
☆ intermediates.
The specimen doubtfully from Kasaji is marked "?". Shading indicates equatorial rainforest block.

Africa. From west of east, red progressively takes the place of certain black parts in the plumage. The most western population (*S. h. haematina*, in Upper Guinea) is black all around the head and has black upper tail coverts in the male. Moving east there are the races named *togoensis*, *immaculosa* and *pustulata*, in which red appears on the upper tail coverts of both sexes and eventually on the cheeks, the whole side of the head, in the region in front of the eyes and finally in a streak above the eye, these birds penetrating far to the east in Zaïre. From the geographical distribution, it seems as if the *pustulata* population is pushing *ruficapilla* towards the east. The population in northwestern Angola (not on the map), eastern Zaïre and neighbouring areas further east (*ruficapilla*), up to now considered as specifically distinct, has the head red all around (most intensively in the male). The specimens marked as intermediates on the map have the frontal part of the crown red, the distal part being black. They are found in areas wherefrom specimens in the contact zone between *pustulata* and *ruficapilla* are available. But 'pure' phenotypes exist in these regions as well. Head colour is the one apparent character that enables one to differentiate them.

Cunningham-van Someren & Schifter (1981) described the race *kilgoris* from 5 specimens taken at the locality with that name (see their map), as being generally duller in colour than other Kenya specimens of

ruficapilla. However, I find specimens with characters exactly as those they described for *kilgoris* among the *ruficapilla* from Kivu, Zaïre. The intensity of back colouration and that of the background of the belly colouration is rather variable, possibly related to age; the juvenile plumage in general is also variable. Therefore I do not think that *kilgoris* is an acceptable race. The race *cana*, living in a restricted area in Tanzania, is more greyish, not jet-black in general colour; also, the red does only cover the frontal part of the crown, about to the same extent as in the intermediates *pustulata*/*ruficapilla*.

In the KMMA collection, there is a female specimen, phenotypically *h. pustulata*, i.e. with restricted red on the head, said to be collected at Kasaji (in Shaba–10°21′S, 23°29′E), which is out of the normal *pustulata* range. This specimen was apparently used for Hall & Moreau's (1970) map. However, its exact provenance is not certain because under its number there is also a (still existing) *Pirenestes ostrinus* skin registered in the catalogue and both bear the same collectors data and number. Possibly the *Spermophaga* specimen was wrongly labelled.

I measured specimens from West Africa (*haematina*) and from Zaïre (*pustulata*, intermediates and *ruficapilla*–see Table 2). It appears that wing and tail length increase slightly from west to east, a phenomenon not uncommon in Afrotropical species. It also appears from the specimens examined that the western populations of *haematina* may have a narrower bill than either *pustulata* or *ruficapilla*, but in general it may be said that all these populations are very close morphologically. Because no detailed field studies in the contact areas are likely in the near future and in view of the close morphology and clinal colour differences and the existence of intermediate specimens, I advocate considering all taxa as belonging in one species only: *Spermophaga haematina*. This species is sympatric in large areas of Zaïre with *S. poliogenys*.

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A review of the Least Nighthawk *Chordeiles pusillus*

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The Least Nighthawk *Chordeiles pusillus*, is poorly represented in ornithological collections in North America, except for the large type series of the subspecies *esmeraldae*. References in the literature to the species are mostly limited to the brief original descriptions of the several subspecies. While identifying a recently collected specimen from San Carlos de Rio Negro in southwestern Venezuela, I examined the specimens in the American Museum of Natural History (AMNH), and sought additional material from other collections. The following is a brief review of geographic variation in the species.

Six subspecies of *Chordeiles pusillus* are recognized, including 2 described since Peters (1945) and 2 newly described here. The subspecies are here arranged geographically from north to south (Fig. 1). Because of the small number of specimens available and the small difference in size between the sexes, measurements of males and females were combined for subspecies represented by fewer than 9 specimens. Capitalized colour names with numbers indicate direct comparison with Smithe's "Naturalists' Color Guide" (1975, 1981).

Figure 1. Distribution in northern South America of *Chordeiles pusillus*, including 2 new subspecies, *xerophilus* and *novaesi*. Stars represent type localities.

Chordeiles pusillus septentrionalis

Chordeiles pusillus septentrionalis Hellmayr, 1908, *Nov. Zool.* 15: 78. (Maipures, Rio Orinoco, "Venezuela"[=Colombia], see below.)

Diagnosis. Similar to nominate *pusillus* but smaller (Table 1); more finely barred ventrally than other subspecies, with undertail coverts white and without barring. Finely vermiculated above, with smaller black areas, especially on the crown, than *esmeraldae*; much less deeply coloured than *saturatus*; darker than the Parahyba population (*xerophilus*), and less reddish than the Marauhao population (*novaesi*), both newly described below.

Range. Eastern Colombia at the type locality on the Rio Orinoco, east through central Venezuela to Guyana, and probably south through Surinam and French Guiana (from whence there are no records to date) probably to Amapa (see below).

Discussion. Two specimens in the AMNH, including the type, were collected by G. K. and S. M. Cherrie at Maipures on the Rio Orinoco on 22 Jan 1899. They bear labels stamped "Venezuela"; Maipures, however, is on the Colombian side of the river. The male paratype (AMNH 476957) is more reddish dorsally than both the type and

TABLE 1

Measurements (mm) of *Chordeiles pusillus*, with range, mean and standard deviation. Measurements for males and females are combined for all populations except *esmeraldae* and *septentrionalis*

Population	No. of specimens	Wing chord	No. of specimens	Tail
esmeraldae				
males	11	120–127 (124.4) *2.2*	11	72–78 (75.1) *2.0*
females	11	122–130 (125.1) *3.4*	11	70–75 (72.9) *1.8*
septentrionalis				
males	8	120–128 (123.8) *3.2*	6	61–68 (65.5) *2.4*
females	4	121–125 (122.7)	4	65–69 (66.8)
pusillus				
Goias	4	132–139 (134.8)	4	75–79 (77.0)
Bahia	2	127 & 127	2	71 & 72
Subsp.				
Ceara	2	118 & 121		
xerophilus	2	129 & 132 (type)	2	72 & 72
novaesi	7	126–128 (126.7) *0.8*	7	69–73 (70.7) *1.5*
saturatus	5	130–139 (135.2) *3.3*	5	76–80 (78.2) *1.6*

6 specimens from Guyana with which it was directly compared, and in this respect is similar dorsally to the Marauhao subspecies (*novaesi*); but it is far less heavily barred ventrally, and has a darker breast-band.

Friedmann (1948) suggested that the Least Nighthawk may be migratory. If so, this would account for the specimen identified as *septentrionalis*, date not given and listed by Hellmayr in his original description, from Forte do Rio Branco [State of Acre]. I have not examined this specimen.

Chordeiles pusillus esmeraldae

Chordeiles pusillus esmeraldae Zimmer & Phelps, 1947, *Amer. Mus. Novit.* 133: 8. (Esmeralda, Territorio Amazonas, Venezuela.)

Diagnosis. Ventrally, entirely and heavily barred with black, including the undertail coverts; *saturatus* is equally heavily barred ventrally but has unbarred white undertail coverts. Dorsally feather edgings paler than in *saturatus*, being nearer dark Cinnamon Rufous (40) than Chestnut (32). Larger than *septentrionalis*, but smaller than *pusillus*.

Range. Central and southern Territorio Amazonas, Venezuela, southwards (at least occasionally) to Baioa, Rio Tocantins, Brazil. This subspecies undoubtedly occurs, but has not been reported, on the Colombian side of the Rio Negro at San Carlos.

Discussion. 33 specimens of the type series are now available in the AMNH, 23 of them collected in October 1928. They range from birds in worn and abraded plumage to others in the last stages of a complete moult, including young birds in late stages of the first prebasic moult (eg. AMNH 272526). One stub-tailed juvenile (AMNH 272545) was collected 9 Nov 1928. Three specimens of *esmeraldae* (Cabullita and Frontern, Bolivar, and Sanariapo, Amazonas) were wrongly listed as *septentrionalis* by Phelps & Phelps (1958)–see list of specimens examined below.

Specimens collected at Baioa, Rio Tocantins, Brazil on 1 Dec 1931 (AMNH 430372) and also 2 in the Museu Paraense Emilio Goeldi (MPEG 28590), one of them from "Rio Tracajutuba, Alesquerdo do Rio Araguari" (Municipio Amapa) in Amapa, collected 10 Jul 1969, the other (MPEG 32925) from "Mun. Ponta do Pedra. Fazenda Tucuma" on the island of Marajo, collected 8 Aug 1978 in coastal Para, are all *esmeraldae* (see arrows on map) and may be migrants; but they more likely indicate that the range of the subspecies extends to the coast south of the mouth of the Amazon River.

Chordeiles pusillus pusillus

Chordeiles pusillus Gould, 1861, *Proc. Zool. Soc. Lond.*: 182. ("supposed to be from Bahia", Brazil).

Diagnosis. Similar to *septentrionalis* but slightly smaller (Table 1); and the belly is more extensively barred with sooty grey; the bars are somewhat wider.

Range. States of Bahia and Goias (Goyas). Reported from Sao Paulo (specimen not seen, cited by Hellmayr 1908).

Discussion. The holotype (BMNH 1861.11.11.179), "a skin of the well-known Bahia-make" (*fide* Hellmayr 1908) and 2 other specimens in the BMNH (88.8.1.55 and 88.8.1.56) labelled "Bahia, March 1880," from Dr Luschnath, are similar to one another (I. C. J. Galbraith, 14 May 1985). Another specimen (USNM 375749) apparently obtained as a mounted bird in "Recife," by "Lt E. W. Pfeiffer" in "1943" on examination is nominate *pusillus*, although Recife is within the range of *C. p. xerophilus* (q. v. below).

I. C. J. Galbraith kindly compared specimens in the BMNH with Gould's type of *C. pusillus*, and sent me the 3 specimens that were most similar in colour and pattern to the type, along with a description of minor differences. Two of these specimens represent the subspecies *septentrionalis* from Guyana (92.1.16.167 and 92.1.16.168), while the third (90.2.28.100) is from Fazenda, State of Goias. Also available is a specimen (AMNH 476956) from Rio Thesouras, State of Goias, which was annotated on the label by Hellmayr "compared with the type" and cited as being typical of *pusillus* (Hellmayr 1908). These Goias specimens, in pattern and colour, are generally like the 2 other specimens from "Bahia," and to the other specimens from Goias; but the specimens from Bahia are smaller than birds of the Goias population, although nevertheless still larger than *septentrionalis* (Table 1). When more specimens are available, the coastal population of *pusillus* may well be recognized as distinct.

I suggest that the type locality of *Chordeiles pusillus* Gould be restricted to Rio Thesouras, State of Goias, Brazil.

Chordeiles pusillus xerophilus, subsp. nov.

Holotype. "Male" [=female by plumage], USNM 264620, Santa Luiza, State of Paraiba, Brazil, collected 8 Jan 1927 by Emil Kaempfer, original number 4479.

Diagnosis. Palest of all the subspecies, being Tawny (38) to Antique Brown (37) on the upperparts; breast band and malar streak near Clay Color (123B). Dusky bars on belly region less distinct than in other subspecies; undertail coverts white without barring.

Range. Known so far only from the type and a formerly mounted specimen from "Bahia" (AMNH 5881) from the Verreaux Collection.

Discussion. The Bahia specimen from the Verreaux Collection, a taken-down mount, had been considered faded and bleached, but it is a near match for the type specimen, and indeed is little faded. Two specimens from "Northern Brazil, Ceara" collected by W. Jesse (BMNH 88.8.1.59 and 88.8.1.60) were examined, and are paler, greyer and smaller (wing chord 121, 118 mm) than specimens of *septentrionalis*, but have not the even paler and more buffy colour of *xerophilus*. When more specimens are available from northern Brazil, they may be found to represent an undescribed subspecies.

Etymology. The name *xerophilus* is from Greek, lover of arid regions (see plates 6–16 in Naumburg (1935) for illustrations of xeric coastal region in the States of Cera, Paraiba and Pernambuco).

Chordeiles pusillus novaesi, subsp. nov.

Holotype. Adult female, AMNH 264620, Flores, State of Maranhao, Brazil, collected 1 Oct 1926 by Emil Kaempfer; original number 3774.

Diagnosis. The most richly coloured subspecies dorsally, with Brick Red (132A) to Chestnut (32) markings on sooty grey feathers (ie. darker coloured than *septentrionalis* and *pusillus*, but less dark than *saturatus*). Barring on undertail coverts weak or absent. Smaller than *pusillus* from Goias.

Range. Maranhao and adjacent Piauhy.

Etymology. It is a pleasure to name this subspecies for Dr Fernando C. Novaes of the Museu Parense Emilio Goeldi, Belem, Brazil.

Chordeiles pusillus saturatus

Chordeiles pusillus saturatus Pinto & Camargo, 1957, *Pap. Av. Pet. Zool*. 8: 51–69. ("Sul do Para, al este do Tapajos"; description not seen.)

Diagnosis. Dorsally the most sooty coloured of all the subspecies, with dark cinnamon feather edgings; heavily barred ventrally, except for undertail coverts, which are white. Larger than *esmeraldae*.

Range. Southern Para (type locality, specimens not seen), and Mato Grosso.

SPECIMENS EXAMINED

C. p. septentrionalis (13). **Colombia**: Maipures, Rio Orinoco 2 (including type). **Venezuela:** *Anzoategui*, "Catawra" (=Cantaura) 1, *Estado Bolivar*, Peru-Callao 2, Sierra Imataca 1. *Guyana*: Annai 7.

C. p. esmeraldae (49). **Venezuela:** *Territorio Amazonas*, 34 specimens from the type series (including the type), San Carlos de Rio Negro 8, San Antonio, upper Rio Orinoco 1, Sanaripo 1; *Estado Bolivar*, Cabullita 1, "Las Frontera" (near Santa Elena) 1. **Brazil:** *Para*, Baiao, Rio Tocantins 1, "Mun. Ponta de Pedras, Fazenda Tucuna" (=island of Marajo) 1;

Amapa, "Rio Tracajutuba Alesquerdo do Rio Araguari, Mun. Amapa" 1.

C. p. pusillus (7). **Brazil:** *"Bahia"* 2; *Goias*, 20 km N of Sao Joao de Alianca 2, Rio Thesouras 1, Fazenda 1; "Recife" (=error ?) 1.

[MPEG 14972, from Aragaucas, Goias, not seen by the author, is undoubtedly the nominate subspecies.]

C. p. subsp. (2) **Brazil;** Ceara. 2.

C. p. xerophilus (2). **Brazil:** *Paraiba*, Santa Luiza 1 (type), "Bahia" 1.

C. p. novaesi (9). **Brazil:** *Maranhao*, Flores 7 (including type); *Piauhy*, Terezina 1, Estremas 1.

C. p. saturatus (6). **Brazil:** *Mato Grosso*, Chapada 4, Mutum Cavallo 2.

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I am indebted to the curators of the following collections for the loan of specimens: British Museum (Natural History), Los Angeles County Museum, Museu Paraense Emilio Goeldi, Belem, Brazil and the National Museum of Natural History, Smithsonian Institution. Dr Ian C. J. Galbraith kindly compared specimens with Gould's type of the species. W. E. Lanyon and John Farrand, Jr. critically reviewed the manuscript and provided helpful suggestions.

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The type-locality of *Alethe poliocephala* (Bonaparte)

by G. F. Mees

Received 14 November 1987

Alethe poliocephala was described by Bonaparte (1850: 262, s.n. *Trichophorus poliocephalus*) on the basis of an unrecorded number of specimens in the Rijksmuseum van Natuurlijke Historie, (RNH) Leiden, and with the somewhat indefinite type-locality "ex Afr. occ.". A few years later, more precise localities of the Leiden specimens began to appear in the literature: "Dabocrom: Pel.–Fernando Po: Mus. Lugdun." (Hartlaub 1857: 85). The next development was Reichenow's (1905: 746) definite

statement: "Der Typus im Leydener Museum stammt von Fernando Po", and this has since been generally accepted (Sclater 1930: 478, Bannerman 1936: 419, White 1962: 131, Ripley 1964: 53).

Unfortunately, Reichenow's statement is not entirely accurate. *T. poliocephalus* was not based on a single specimen that could be referred to as "Der Typus", but on 3: two of them were from Dabocrom, Gold Coast (leg. H. S. Pel, 1843), and one marked "Fernando Po" in C. J. Temminck's handwriting, but with neither a collector's name, nor a date. All 3 were formerly mounted and bore in Temminck's hand the identification "*Trichophorus poliocephalus* Tem., nov. sp.". Around 1900, the then curator, O. Finsch, took these birds off their stands and provided them with new labels, on which he copied the information originally written on their socles. He also added the incorrect year to Pel's specimens, 1842 instead of 1843 as it should have been. On the label of the third specimen he placed the name "Fernando Po", Tem., in inverted commas, thus expressing doubt about this provenance.

Recently, looking through the material of *Alethe* in the RNH, I found myself unable to distinguish the specimen supposedly from Fernando Po from 3 specimens (including the 2 other syntypes) from the Gold Coast, and 3 from Liberia.

Authentic specimens from Fernando Po being unavailable in Leiden, I borrowed 2 from the British Museum (Nat. Hist.). The difference between specimens from the Gold Coast (ear-coverts partly brown) and Fernando Po (ear-coverts blackish grey) is rather subtle, but a comparison showed that the Leiden specimen labelled "Fernando Po" is certainly not from that island, and that it belongs to the West African subspecies with brownish ear-coverts. Most likely, it also came from one of the Dutch posts on the Gold Coast, just as the other 2 syntypes did.

Reichenow was apparently the first to recognize 2 subspecies in *A. poliocephala*, and therefore it is logical that he needed a restriction of the type-locality of the nominate race. It is a pity, however, that he did not consult his friend Finsch in Leiden before doing so, as Finsch would certainly have passed on his doubts about the identity of the "Fernando Po" specimen. Under the Code, Reichenow's statement must, regrettably, be accepted as a lectotype-designation (cf. Ride *et al.* 1985: art. 74), although it goes against all recommendations that ought to accompany such an act (particularly 73F and 74E). My personal inclination is to take a less legalistic course, and to reject Reichenow's designation, so that there are 3 syntypes, on the basis of 2 of which the type-locality can be accepted as being Dabocrom. For those who, on formalistic grounds, accept the "Fernando Po" specimen as the lectotype, I propose Dabocrom as its designated type-locality, as there is no chance ever of finding out its exact provenance. The place-name of Dabocrom does not appear on ordinary maps, but is shown by Holthuis (1968: 9).

The consequences for the nomenclature are that the West African subspecies, currently known as *A. p. castanonota* Sharpe, 1871, becomes the nominate one, while the subspecies inhabiting Fernando Po, Cameroon, Gabon, etc., currently regarded as the nominate race, takes the next oldest name, *A. p. compsonota* (Cassin, 1859)–cf. Bates (1911: 623–624).

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I thank Mr G. S. Cowles, British Museum (Natural History) Tring, for the loan of the 2 specimens from Fernando Po, discussed above.

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Plumage ontogeny and taxonomic status of the Dusky Starfrontlet *Coeligena orina* Wetmore.

by Robert Bleiweiss

Received 19 November 1987

In 1951, the indefatigable collector M. A. Carriker, Jr. obtained a peculiar specimen of the hummingbird genus *Coeligena* at 10,500 ft on the Páramo de Frontino, an isolated páramo at the northern end of the Western Cordillera of Colombia. Wetmore (1953) subsequently described this bird as a new species, *Coeligena orina*, the Dusky Starfrontlet, based principally on its unusual plumage. The holotype was distinguished from its congeners by an iridescent dark green body and the absence of the brightly coloured frontlet and black hood typical of the so-called "Starfrontlet" *Coeligena* hummingbirds (Table 1).

Coeligena orina is still known only from the holotype (USNM 436219), which Wetmore believed was a fully adult male. While examining the holotype, however, I noticed numerous corrugations on the horny sheath of the bill. Bill corrugations in hummingbirds occur only in immatures. Their number decreases with ontogeny and provides a good indicator of relative age (Ortiz-Crespo 1972, Stiles & Wolf 1974, Bleiweiss 1985). Because of its numerous bill corrugations, there is no doubt that the holotype of *C. orina* is an immature bird. Taxonomic evaluation of this

TABLE 1

Colour characteristics of adult and immature (imm) male *Coeligena bonapartei* subspecies and *C. orina*; only features with significant ontogenetic variation are listed for immature *C. bonapartei*. Colour names in table and text (except bronze) correspond to names of colour swatches in the *Naturalist's Color Guide* (Smithe 1975). F = frontlet; H = hood; TS = throat spot; BR = breast; BY = belly; UNTC = under tail coverts; RUTC = rump and upper tail coverts; TAL = tail; TERT = tertials.

	F	H	TS	BR	BY	UNTC	RUTC	TAL	TERT
b. eos (adult)	apple green	black	spectrum violet	lime green	spectrum orange	cinnamon	spectrum orange	cinnamon tipped bronze	cinnamon
b. eos (imm)	dark green edged black	dark green edged black	spectrum violet		bronze to spectrum orange		bronze to spectrum orange		
b. bonapartei (adult)	apple green	black	spectrum violet	spectrum green	spectrum orange	bronze green edged cinnamon	spectrum orange	bronze	blackish
b. bonapartei (imm)	dark green edged black	dark green edged black	spectrum violet		bronze to spectrum orange		bronze to spectrum orange		
orina	dark green edged black	dark green edged black	spectrum blue	dark green	lime to yellow-green	lime green	lime to yellow-green	lime to parrot green	blackish

unique specimen therefore requires consideration of the possible ontogenetic nature of its unusual characteristics.

Based on plumage colour, *C. bonapartei* appears to be the nearest relative of *C. orina* within *Coeligena* (Wetmore 1953). To evaluate age-related plumage characters in *C. orina*, I compared its plumage to that of the ontogenetic stages of male *C. bonapartei eos* and *C. b. bonapartei* (Table 1, Fig. 1). The third subspecific taxon *C. b. consita* (Wetmore & Phelps 1952) is known only from 4 female specimens. Starfrontlet *Coeligena* are sexually dimorphic, so I sexed specimens without gonad data by plumage and measurements. I used specimens with accurate locality data to evaluate plumage ontogeny and mensural variation. Based upon these comparisons, the holotype of *C. orina* appears to be an immature of a subspecies of *C. bonapartei*. This conclusion is also supported by variation among trade skin specimens, which lack accurate locality data.

All specimens of adult male *C. bonapartei* which I examined had a large glittering apple green frontlet (33–48 feathers, N = 18), a black hood extending from the posterior border of the frontlet to the nape, and a glittering spectrum violet throat spot (15–42 feathers, N = 17). All immatures had well developed pennaceous body and flight feathers and like *C. orina* (Carriker field notes), were probably fledged birds. I detected significant variation in crown, throat and body colours, which were all less developed or absent among immatures.

Crown. Most immature male *C. bonapartei* lack a glittering frontlet, which appears to develop before the bill corrugations disappear (Fig. 1). The actual moult was evident in one male with an intermediate number of bill corrugations; the entire forecrown was covered with glittering green

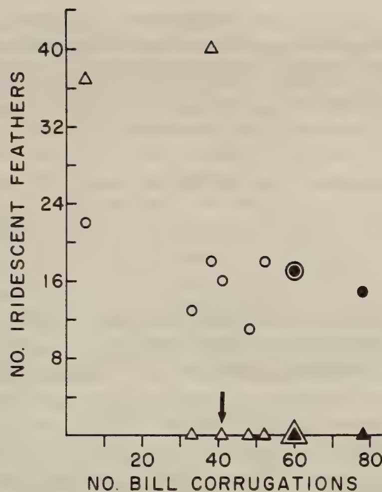

Figure 1. Ontogeny of the frontlet and throat spot in *Coeligena bonapartei*. Numbers of bill corrugations and iridescent feathers were estimated by the methods outlined by Bleiweiss (1985). Fewer corrugations indicate birds of relatively greater age. Triangles are counts of glittering frontlet feathers. Circles are counts of glittering throat spot feathers. The arrow indicates the individual with extensive moult of the frontlet (see text for discussion). Open symbols are for *C. b. eos*, solid symbols are for *C. b. bonapartei*. The double symbols are for *C. orina*.

feathers still enclosed within their sheaths (44 feathers). In immature *C. bonapartei* that lack a frontlet, crown feathers are bicoloured, dark green edged with black. This is precisely the colour of crown feathers in *C. orina*. The black hood in *C. bonapartei* develops gradually only after the frontlet appears, through an anterior to posterior replacement of the bicoloured feathers behind the frontlet. Black hood feathers were absent in the bird with the moulting frontlet, were limited to a narrow posterior border to the frontlet in the bird with an intermediate number of bill corrugations, and extended to the midcrown in the bird with the fewest bill corrugations. Since *C. orina* has many bill corrugations, it is a relatively younger bird. The absence of the typical Starfrontlet colouration on its crown is probably due to the usual late development of these features in the Starfrontlet ontogeny.

Throat spot. Although the throat spot appeared to increase in size through the ontogeny of *C. bonapartei* (Fig. 1), there was considerable variation in the number of throat spot feathers among adults. The two subspecies differed in the number of throat spot feathers (*C. b. eos*, 18–42, N = 17; *C. b. bonapartei*, 15–18, N = 2). Therefore the small size of the throat spot in *C. orina* (17, plus one sheathed feather) may reflect either an early stage of development, or an individual or geographic difference. In *C. orina* only one new throat spot feather was still partly sheathed, which may indicate that the throat spot was approaching its adult size.

TABLE 2

Mean, ±one standard deviation, sample size for mensural characters of adult male *C. bonapartei* subspecies and *C. orina*. EC = exposed culmen; CF = culmen from flange of nasal operculum; P = chord of outer primary; WB = chord of wing from butt to tip; OT = outer tail feather. Sample sizes are in parentheses.

	EC	CF	P	WB	OT
C. b. eos	28.46±0.81 (15)	35.25±0.77 (16)	54.21±1.31 (14)	72.32±1.67 (13)	47.30±1.18 (13)
C. b. bonapartei	26.9, 31.4 (2)	32.3, 36.5 (2)	54.0, 54.6 (2)	71.9, 72.6 (2)	50.9 (1)
C. orina	30.8	36.1	54.7	72.0	47.1

Body Colour. Wetmore described the body colour of *C. orina* as dark green, noting that it lacked any of the bronzy (to orange) sheen present on the rump, upper tail coverts and belly of *C. bonapartei*. My examination of *C. orina* supports Wetmore's description, but I noted some bronzy reflections on the upper tail coverts and belly. Bright spectrum orange feathers appear on the rump, upper tail coverts and belly of immature *C. bonapartei* and increase in number with age; thus the bright feathers on the lower back and belly of *C. orina* (Table 1) may be more extensive in adults.

Other aspects of plumage colouration did not appear to vary with ontogeny. Thus, only the following colour characteristics do not vary with age among fledged male *C. bonapartei* and on this basis may be distinctive for *C. orina*: a throat spot that is spectrum blue (*orina*) rather than spectrum violet (*bonapartei*), under tail coverts that are uniform lime green (*orina*) rather than cinnamon (*eos*) or bronze green edged cinnamon (*bonapartei*), a tail that is parrot to lime green (*orina*) rather than cinnamon tipped bronze (*eos*) or bronze (*bonapartei*), a breast that is dark green (*orina*) rather than lime (*eos*) or spectrum (*bonapartei*) green, and a rump, upper tail coverts, and belly that are dark green mixed with lime and yellow-green with some bronzy reflections (*orina*) rather than spectrum orange (*bonapartei*) (Table 1). Wetmore mentioned that the wings and under wing coverts were darker in *C. orina* compared to *C. bonapartei*, but the slight differences were hard to evaluate.

My measurements corroborate Wetmore's observation that the bill of *C. orina* is slightly longer than in adults of either subspecies of *C. bonapartei* (Table 2). This may be another reliable difference, since bills of immature hummingbirds are typically shorter than those of adults.

These data indicate that the most distinctive plumage features ascribed to *C. orina* by Wetmore (1953) correspond to an ontogenetic stage in related *C. bonapartei* and are therefore probably age-dependent. Consequently, description of adults will be necessary to determine the degree of differentiation of this isolated population. On the other hand, on the basis of the features of the holotype that are not age-related, the taxon might be considered a subspecies of *C. bonapartei* (see also Meyer de Schauensee 1959), since it is no more distinct than males of the currently recognized subspecies. Assessment of *orina* as a subspecies is consistent with the pattern of moderate and probably infraspecific differentiation among other endemic hummingbird taxa in the northern Western Cordillera:

Eriocnemis vestitus paramillo (previously described as a distinct species–see Chapman 1917), which also occurs at the northern end of the Central Cordillera at the Páramo de Sonsón (Bleiweiss MS), and *Metallura williami recisa* (Wetmore 1970). Although geographically isolated highlands often harbour endemic hummingbird species, the greatly reduced extent of high altitude habitats in the northern Western Cordillera may retard differentiation of endemic high altitude trochilofauna there (Vuilleumier 1970).

The following specimens were measured (acronyms are defined in the acknowledgements):- *C. b. eos* adults: AMNH 37523, 100522–23, 113510, 177188, 182347, 482780, 482785, 482787; ANSP 65386; CM 37276, 8912, 89945; immatures: MCZ 94723; MLOC 1417, 1419, 1422; USNM 149154, 354747. *C. b. bonapartei* adults: AMNH 121588; DEL 56781; immatures: WFVZ 21698. *C. orina* immatures: USNM 436219.

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A new antwren (*Myrmotherula*) from southeastern Brazil

by Luiz Pedreira Gonzaga

Received 15 December 1987

In 1982, while banding birds in a partially isolated and very disturbed woodlot located in the foothills of Serra dos Órgãos, Rio de Janeiro, Brazil, I mist-netted an antwren which I could not immediately refer to any of the species of *Myrmotherula* known to occur in southeastern Brazil (*M. gularis, M. axillaris, M. minor, M. unicolor* and *M. urosticta*–Meyer de Schauensee 1966, Pinto 1978). Two of these, *M. axillaris* and *M. unicolor*, were known to live in the area, having been regularly observed and captured in the course of my previous work there, 1975–1982 (Gonzaga 1986). As I suspected it of being an undescribed bird, I prepared the specimen as a skin. Comparisons made of this specimen with material of the genus in the American Museum of Natural History (AMNH), the British Museum (Natural History) (BMNH), the Cambridge University Museum of Zoology (CUMZ), the Museu Nacional do Rio de Janeiro (MNRJ), the Museu Paraense Emílio Goeldi (MPEG), the Museu de Zoologia da Universidade de São Paulo (MZSP) and the National Museum of Natural History (USNM), and discussions held with colleagues who examined the specimen, have led me to confirm my initial suspicion and to describe the bird as a representative of a new species, as follows:

Rio de Janeiro Antwren **Myrmotherula fluminensis** sp. nov.

Holotype. Museu Paraense Emílio Goeldi No. 40786. Inactive adult male (gonads 1 mm, skull ossified) from 4 km southeast of Santo Aleixo, Majé, Rio de Janeiro, Brazil (22°34′45″S, 43°01′39″W), elevation c. 20 m; collected 4 Jul 1982 by L. P. Gonzaga.

Distribution. Known only from the type locality.

Description of Holotype. Upperparts, including upper tail coverts, sides of breast, flanks and under tail-coverts bluish-grey. Chin, throat, malar region, breast and belly black, shading grey on lower belly. Eye ring and subocular stripe white. Ear coverts grey, whitish basally, forming a light auricular spot immediately above the black of the throat. Under wing-coverts and axillaries white. Wing-coverts black, broadly tipped with white. Flight feathers grey, outer primaries narrowly edged white. Inner primaries with white margins on inner webs. Outer edges of all flight feathers except outer primaries edged bluish-grey. Tail grey, outer edges of feathers paler. Soft part colours: iris brown; bill blackish-brown with ivory tomia; tongue and gape orange; feet pale bluish-grey, soles yellowish.

Measurements of Holotype (mm). Wing (flat) 53; tail 40 (outer rectrices 10 mm shorter than the central pair, and 5 mm shorter than the adjacent pair); culmen exposed 14, from anterior edge of nostril 9; tarsus 16.5; total length 117. Weight 9 g. Wing formula: p6 is the longest primary, p5 and

TABLE 1

Measurements (mm) of *Myrmotherula fluminensis* sp. nov. (♂) and *Myrmotherula iheringi* (♂♂) compared

Specimen	Wing (flat)	Tail	Tarsus	Exposed culmen
M. fluminensis				
Holotype	53	40	16.5	14
M. iheringi				
AMNH 127604	51	29	13.0	13
AMNH 286524	50	27	15.0	13
AMNH 490590	52	28	15.0	13
AMNH 824069	53	31	15.5	14
BMNH 1914.4.25.10	50	28	14.5	11
MNRJ 17470	51	28	15.0	12
MNRJ 17472	50	29	15.0	—
MPEG 5169	51	27	15.0	13
MPEG 24609	51	30	16.0	12
MZSP 58726	51	28	15.0	12
USNM 313724	49	28	—	12

p7 very slightly shorter; p8 2.5 mm shorter than p7, p9 5 mm shorter than p8, p10 10 mm shorter than p9; p 1-5 of nearly equal length.

Etymology. From Latin *flumen*, river; referring to the state of Rio de Janeiro, where the holotype was collected.

Diagnosis. The holotype shows a combination of characters (lack of white on flanks and tail, white under wing-coverts and black on the throat extending laterally up to the malar region) found in males of only one other species of the genus, *Myrmotherula iheringi* (see Meyer de Schauensee 1982). This latter species was described by Snethlage (1914) after having herself (Snethlage 1908, 1912) referred specimens of *M. iheringi* to *M. garbei*, from which, however, the males of *M. iheringi* clearly differ by having white (instead of grey) under wing-coverts. *M. garbei* has been treated as a subspecies of *M. longipennis* (e.g. Pinto 1978). From the male of *M. iheringi*, in turn, the holotype of *M. fluminensis* differs in having a much longer and more graduated tail, a slenderer bill, a clear bluish cast in the plumage, and a larger extension of black on the abdomen. Recently the first Peruvian specimen of *M. iheringi* (as assigned on the label) was collected by J. W. Fitzpatrick in Manu National Park and deposited in the American Museum of Natural History (AMNH 824069). Apart from differences in size (tail; see Table 1) and coloration (extension of black on the abdomen), the Peruvian specimen is remarkably similar to the holotype of *M. fluminensis* and correspondingly different from all other specimens of *M. iheringi* examined. J. W. Fitzpatrick (*in litt.* 1986) comments that it would be surprising if Peruvian "*iheringi*" (of which he has since collected more specimens) turned out to be undescribed, "but it is by no means impossible, since the taxonomy of this confusing group still needs to be clarified". Graduation of the tail is found also in some specimens of *M. iheringi* (e.g. AMNH 127604 and 824069) and possibly of other species in this group. The presence of variable amounts of white on the face (auriculars and eye-ring) can be found in specimens of several species (e.g. *M. iheringi* MPEG 5169, *M. unicolor* AMNH 314549, *M. longipennis* MPEG 24602) and,

although particularly conspicuous in the holotype of *M. fluminensis*, may be a general trend in the group rather than a diagnostic character. Finally it must be stressed that males of *M. axillaris* from southeastern Brazil (*M. a. luctuosa*) have a tendency to reduction of white on the flanks (e.g. specimens collected by E. Kaempfer in Bahia and Espírito Santo, AMNH) when compared to the males of all other subspecies. However, even in those specimens the presence of grey mixed with black in the malar region and on the underparts, as well as the presence of white on the tips of the rectrices, are constant. Furthermore, the presence of white on the flanks and tail of individuals of *M. axillaris* is locally constant in the population from Majé (the type-locality of *M. fluminensis*) and seemingly also in the entire state of Rio de Janeiro, which is the southern limit of distribution of the species.

Additional remarks. Most of the species of *Myrmotherula* ever recorded in eastern Brazil are rather local and at best uncommon, if not actually rare. This is the case for *M. minor* and *M. unicolor*; *M. urosticta*, though relatively common, is even more restricted in range, both latitudinal and altitudinal, than those 2 species (cf. Pinto 1978, Teixeira & Gonzaga 1985; see also Scott & Brooke 1985, Willis & Oniki 1981). Another species which has been placed in this genus, *M. erythronotos* (Meyer de Schauensee 1966, Pinto 1978), was known only from specimens collected in the nineteenth century around one locality (King 1978–1979, Sick & Teixeira 1979, Scott & Brooke 1985) until its rediscovery in September 1987 in another place (Pacheco in press.). The general appearance, behaviour and voice of *M. erythronotos* suggest it is better placed in the genus *Formicivora* (J. F. Pacheco). The 2 commonest species of *Myrmotherula* in eastern Brazil are *M. gularis*, endemic to this region like the preceding 2 (although the status of Amazonian *M. minor* needs to be better ascertained–T. A. Parker *in litt*. 1986), and *M. axillaris*, undoubtedly the most widespread of all (pers. obs. and Scott & Brooke 1985). *M. axillaris*, like *M. minor, M. unicolor* and *M. urosticta*, seems to be largely restricted to lower elevations (up to 500 m), while *M. gularis* has been recorded from 300 m up to 1200 m (Scott & Brooke 1985; see also Willis & Oniki 1981).

The late discovery of this male of *M. fluminensis*, after 7 years of research in the area (Gonzaga 1986), suggests that this bird may have been a straggler from the nearby slopes of the Serra dos Órgãos, though whatever the population present there it must be local and very small. However, as in other similar cases in the past, one cannot easily dismiss the possibility of the unique specimen of *M. fluminensis* being a hybrid, e.g. *M. axillaris* × *M. unicolor*, although hybrids in this group must be rare, having never been reported among the Formicariidae. It seems equally conceivable, but probably easier to prove, that the holotype of *M. fluminensis*, instead of being a rarity, is simply a representative of an overlooked population, of which sight records may have been referred to grey-flanked 'typical' males of *M. a. luctuosa*. To discover additional individuals of such an overlooked population is therefore a major challenge to observers and collectors who have the opportunity to work in the foothills and lower-elevation forests of the Serra dos Órgãos or maybe elsewhere in the state of Rio de Janeiro.

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A new name for the eastern subspecies of the Brown-backed Solitaire *Myadestes occidentalis*

by H. Douglas Pratt

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The Hawaiian thrushes were long classified in an endemic genus *Phaeornis*. Pratt ('Relationships and speciation of the Hawaiian thrushes': 1982, *Living Bird* 19: 73–90) showed that these birds were very similar in

a variety of characters to American solitaires of the genus *Myadestes*, and recommended the merger of that genus and *Phaeornis*. The Thirty-fifth supplement to 'The American Ornithologists' Union Check-list of North American Birds' (6th Edition 1983) (1985, *Auk* 102: 683–684) followed Pratt's recommendation. The former *Phaeornis obscurus* (Gmelin) 1789 thus became *Myadestes obscurus* (Gmelin) 1789 and the Latin name of the Brown-backed Solitaire of Mexico, formerly *M. obscurus* Lafresnaye 1839, became preoccupied. The Brown-backed Solitaire is now known as *M. occidentalis* Stejneger 1882, based on the epithet of its western subspecies. No name is available, however, for the eastern and formerly nominate subspecies. I propose that it be called

Myadestes occidentalis orientalis nom. nov.

in the hope that the seemingly contradictory epithets will cause less confusion than a totally new name devoid of useful information.

It should be noted that this paper is the same as the one which was cited in my earlier work (Pratt *loc. cit.*) as "Pratt (in press)". It will not be published, *contra* the citation, in the Occasional Papers of the Museum of Zoology, Louisiana State University.

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Notes on some Brazilian seabirds (3)

by Dante Martins Teixeira, Jorge B. Nacinovic, Inge M. Schloemp and Eddio E. Kischlat

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This report follows Teixeira *et al.* 1985, 1986, and records results of field-work covering the little known seabirds in Brazilian waters. They were obtained by the Ornithological Section of Museu Nacional during the last 2 years. In addition, the authors comment on some recently published data on Brazilian seabirds and clarify some existing misidentifications. Specimens in Brazilian ornithological collections are referred to by the initials of each institution plus the respective catalogue number. English names and the sequence of species follow Meyer de Schauensee (1970).

LIGHT-MANTLED ALBATROSS *Phoebetria palpebrata*

In 1985, Willis & Oniki (1985) re-identified the single specimen of *Phoebetria* in the collection of the Museu de Zoologia da Universidade de São Paulo (MZUSP 37153) as a Sooty Albatross *Phoebetria fusca*, as opposed to other authors (e.g. Pinto 1978, Sick 1985), who considered this specimen, obtained from Bertioga, coastal Sao Paulo (c. 23°50′S, 46°09′W) to be a Light-mantled Albatross *P. palpebrata*. Recently, we had the opportunity to visit the collection of MZUSP and to compare this

bird with our notes based on the series of both species housed in the British Museum (Natural History). As a result we consider the MZUSP specimen, a male in adult plumage (which is recognizable by the whitish shafts of the primaries and tail–see Harrison 1983 and Murphy 1936) should be attributed to *P. palpebrata*. Even though some individuals of both species may appear quite similar, the MZUSP bird has dark brown head, wings and tail contrasting with the greyish plumage of the body, a pattern typical of *P. palpebrata*, but apparently not observed in adults of *P. fusca*, which have an entirely sooty-brown plumage. So far as we know, the record of *P. palpebrata* in Brazil is based only on this specimen, though it has been reported in sight records from coastal Rio Grande do Sul (Vooren 1985).

KERGUELEN PETREL *Pterodroma brevirostris*

As stated previously (see Blake 1977, Teixeira *et al.* 1985), the South American records of the Great-winged Petrel *Pterodroma macroptera* have been erroneously credited to *P. brevirostris*. So far as we know, the only occurrence of the Kerguelen Petrel in South America has been based on a single bird from Canelones, Uruguay (Escalante 1979). However, the Museu Nacional obtained a male of this species (MN 35237) from Salvador, Bahia (c. 12°59′S, 38°31′W) in September 1985. As so often the case with seabirds in Brazil, this specimen had been stranded on the beach during a storm.

WHITE-BELLIED STORM-PETREL *Fregetta grallaria*

Even though Pinto (1938) included this species in his 'Catalogo das Aves do Brasil', apparently there were no substantiated records to confirm its inclusion in the Brazilian avifauna (Teixeira *et al.* 1986). However, in October 1987 it was possible to recognise isolated individuals of *F. grallaria* along with the Wilson's Storm-petrels *Oceanites oceanicus* in Brazilian waters c. 370 km off the Espirito Santo coast (c. 20°18′S, 36°42′W). There are also other recent reports of this species along the Brazilian coast ["between Rio de Janeiro and Salvador"] (Coelho *et al.* 1985). *F. grallaria* may be more common in pelagic Brazilian waters than previously believed, but there are no records for any species of this genus on the coast.

AUSTRALASIAN GANNET *Sula serrator*

In August 1986, Bege & Pauli (1986) obtained an isolated specimen of this gannet from Ilhas Moleques do Sul, coastal Santa Catarina (c. 27°51′S, 48°26′W), southern Brazil. This seems to be the first record of this species for the Americas; *S. serrator* has an Australasian range, with accidental occurrence previously only in southwestern and southern Africa (Harrison 1983, Nelson 1978). Considering the close similarities between species of the *Sula bassana* complex, it is possible that the recent record of *Sula capensis* off the coast of Rio Grande do Sul (c. 29°–32°S, *apud* Belton 1985, Vooren 1985) could be attributed to the Australasian Gannet, the identification apparently being based on a photograph.

BLACK TERN *Chlidonias niger*

In South America, the Black Tern has been recorded as a seasonal visitor along the coasts of Colombia, Venezuela, the Guianas and Peru; it

also occurs accidentally in Chile and Argentina (Blake 1977, Harrison 1983). On 12 Nov 1987, we obtained a female (MN 35290; gonads 3 mm, 63.5 g, 242 mm total length; stomach contents: 2 specimens of *Jenynsia jenynsia*), in typical first-winter plumage, from Lagoa de Maricá, municipality of Maricá, Rio de Janeiro (c. 22°56′S, 42°50′W). This seems to be the first record of this species for Brazil.

SANDWICH TERN *Sterna sandvicensis*

The occurrence of the Sandwich Tern in Brazil seems to be based on a single banded specimen captured in Rio Grande do Norte (Sick 1979, 1985). In the last few years, however, we have obtained 4 specimens of this species from Guanabara Bay (c. 22°50′S, 43°10′W), Rio de Janeiro (MN 33211, ♂, gonads 4 mm, 250 g; MN 33225, unsexed, 222 g; MN 33272, ♀, gonads 2 mm, 242 g; MN 34197, ♀, gonads 4 mm, 195 g, 395 mm total length). They were collected in April, May, July and September. Some authors (e.g. Voous 1968, 1977, Pinto 1938) consider misidentifications involving the very similar Cayenne Tern *Sterna eurygnatha* to be common, since both species frequently occur side by side in the same flock. Though not always easily so, recently collected specimens of *S. sandvicensis* may be recognizable by their small size and also by the colour of their foot-soles, which are whitish, instead of yellowish as in *S. eurygnatha*. The movements of both species in Brazilian waters are little known, but according to our observations, the Sandwich Tern is not a common species on the southeastern Brazilian coast.

BROWN NODDY *Anous stolidus*

Breeds on several south Atlantic oceanic islands such as Fernando de Noronha, Trindade, St. Paul Rock etc. In May 1987, E. E. Kischlat obtained a very decomposed corpse of an individual from Barra de Tijuca, Rio de Janeiro (c. 22°54′S, 43°14′W). With its pelagic habits, this species is very uncommon in such waters, and this seems to be its first record on the Brazilian coast.

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Aberrant primaries and rectrices in Columbidae

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Normally, birds have a species-specific fixed number of primaries, secondaries and rectrices. However, occasionally they have been found to have abnormal numbers of these feathers (Stresemann & Stresemann 1966, Hanmer 1981, 1985, Somadikarta 1984, Melville 1985).

At Ludhiana (30°56′N, 70°52′E, c. 247 m a.s.l.) birds belonging to 5 species of Columbidae have been collected for gut content, morphometry and plumage studies, namely, Blue Rock Pigeon *Columba livia*, Ring Dove *Streptopelia decaocto*, Little Brown Dove *S. senegalensis*, Spotted Dove *S. chinensis* and Red Turtle Dove *S. tranquebarica*. Of these, out of a total of 206 Ring Doves and 127 Blue Rock Pigeons examined, one Ring Dove was found to be anisorectricial (0.49%), 2 had one primary missing (0.98%) and one Blue Rock Pigeon (0.79%) had an additional pair of primaries. All other specimens were normal, having 10 pairs of primaries, 12 pairs of secondaries and 6 pairs of rectrices.

The anisorectricial Ring Dove collected on 15 Sep 1985 had 13 rectrices, 6 on the left and 5 on the right side of the central pair, all of which remained evenly spaced across the pygostyle (Fig. 1) but were slightly more cramped on the side with the extra rectrix.

Of 2 Ring Doves, collected on 15 Jan 1986 and 17 Apr 1986, both had one primary missing on its left wing, ie. 9 primaries instead of 10 (Fig. 2). There was no evidence of trauma. The right wings had the normal 10

Figure 1

Figure 2

Figure 3

Figure 1. Tail of Ring Dove *Streptopelia decaocto* having 13 rectrices. An extra rectrix (No. 6) is present on the left side. (Saini & Toor).

Figure 2. Left wing of Ring Dove *Streptopelia decaocto* having 9 primaries. (Saini & Toor).

Figure 3. A Blue Rock Pigeon *Columba livia* having 11 pairs of primaries. P1 to P5 are new feathers, P6 is in moult and P7 to P11 are old feathers. (Saini & Toor).

primaries each. In both cases, it is not known which primary was missing since all the primaries were evenly spaced.

Cases of extra primaries are much less common than those of extra rectrices (Stresemann 1963, Snow 1967). A Blue Rock Pigeon collected on 10 Mar 1986 had an additional eleventh pair of primaries. The bird was in primary moult; the first 5 pairs of primaries had completed the moult, the 6th pair was moulting (moult score 4), while primaries 7–11 were old (Fig. 3).

Cases of anisorectricial birds have been reported in 45 species belonging to 16 families (Hanmer 1985) and a case of extra primary is reported in the Red-necked Stint *Calidris ruficollis* (Melville 1985). Among columbids anisorectricial birds have been reported in *Streptopelia capicola, S. senegala, S. decipiens, Oena capensis* and *Treron australis* (Hanmer 1985). However, there has been no previous record of aberrant rectrices and primaries in *Streptopelia decaocto* and *Columba livia*.

As suggested as long ago as 1896 by Newton, the death of a germ cell due to injury may be responsible for missing primaries, but the presence of extra rectrices cannot be thus explained. In the Blue Rock Pigeon the extra pair of primaries could be of phylogenetic origin, reflecting an evolutionary trend of reduction in the number of primaries in the past.

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A new locality for the Comb Duck *Sarkiniornis melanotos* from western Ecuador and notes on the distribution of the Horned Screamer *Anhima cornuta*

by Fernando Ortiz Crespo

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On 5 Nov 1987 I visited Reserva Manglares-Churute (south side of the Gulf of Guayaquil, 2°30′S, 70°45′W), accompanied by the Reserve's

superintendent, Mr F. Zambrano. As we went in an outboard-motor canoe down a narrow mangrove-lined channel at about 6.30 a.m., we saw flocks of 15–25 large ducks that took off from the taller trees. Their colours were hard to see in the early morning light, so at first I accepted my companion's identification of them as "patos machacones" (Muscovy Ducks *Cairina moschata*), a species common in the wild in the Guayaquil area. Later, when I watched some ducks carefully and in better light, I noticed that all had uniformly white or whitish heads, necks and underparts, and dark wings, and thus were unlike any wild ducks I had seen previously in Ecuador; they resembled some types of domesticated Muscovies in pattern. Their silhouette was also striking, as despite the unmistakable duck-like bill, the legs and neck were rather long and goose-like, so that they were clearly separable from Muscovy Ducks. I identified them as Comb Ducks *Sarkiniornis melanotos*, a species almost unknown in Ecuador, but which is included in a recent checklist (Butler 1975)–without a precise locality–as generally from the "West Tropical" region. Comb Ducks are also listed for Ecuador by Ortiz-Crespo & Valarezo (1975) on the basis of two specimens shot near Mt Cayambe in the high Andes in the austral summers of 1951 and 1952 and thought to be stragglers (Norton *et al.* 1972). The species had previously been unrecorded altogether from Ecuador, and was still considered to be accidental as recently as 1982 (Ridgely MS).

Despite several sightings of flocks flying near our canoe and perching repeatedly in the mangroves, I did not notice the comb that characterizes adult males of this species. Since Hilty & Brown (1986) state that the sexes do not associate and form "separate groups as in the Old World", I conclude that the flocks consisted only of females (and perhaps immatures). These latter authors confirm that the Comb Duck can be mistaken for a domesticated Muscovy, as happened in this case, but state that all adults of the latter have a white wing patch. This wing pattern was seen in otherwise wholly dark-plumaged ducks flying singly or in pairs that day, but was not present in any of the ducks in the flocks. The greatest number seen at one time was c. 50 individuals that flew in an asymmetrical V-formation c. 100 m above our canoe, at c. 7.30 a.m.

Professor Gustavo Orces of Quito, who knew personally the hunter that collected the Cayambe birds, told me at the time that he considered it very odd that 2 birds of a rare species should be obtained at the same small lake in successive years; further, he remembered that both birds were immatures in extensive wing moult, but could not account for these coincidences except by assuming that they were migrants using the same flyway. In regard to the Comb Duck's status elsewhere, it is listed only from western Peru by Parker *et al.* (1982), where it is considered rare (the W. Ecuadorean and Peruvian birds may form a continuous population). It is recorded also in eastern Peru by Meyer de Schauensee (1966). It is "spotty and very sporadic" in Colombia, but seasonally common in Guarico, Venezuela (Hilty & Brown 1976). It has a very broad range, from Darien in Panama (where it is "fairly common'–Ridgely 1976) to central Argentina, but everywhere the biology of the New World population remains little known and its migrations or local movements are almost entirely undocumented.

The *Rhizophora-Avicennia* mangrove habitat stretches for more than 10,000 ha to the west within the reserve and is essentially continuous with the extensive estuarine mangroves of the Guayaquil Gulf; but there is a smaller inland freshwater marsh on the east side of the Reserva Manglares-Churute which is inhabited by scores of Horned Screamers *Anhima cornuta* (locally named "canclon"). During a short walk later the same day I observed 6 different individuals. Their presence there had become known when the Churute peasants talked to biologists working on the establishment of the reserve about 10 years ago. In fact, the lake in the marsh was named by the peasants "Laguna del Canclon", confirming the regular occurrence of the Horned Screamer there. Besides this locality, the species is known from the Guayaquil area by an old "Balzar" specimen (Chapman 1926) and by sight records from the Abras de Mantequilla marshes in the Babahoyo river (Lino Delgado). The species is far better represented in collections from eastern Ecuador and other localities east of the Andes (Orces 1944), Meyer de Schauensee 1966), but is uncommon everywhere in Ecuador. The population in the Guayaquil-Babahoyo area is the only one known from the Pacific drainage of the New World.

The Reserva Manglares-Churute is one of the few remaining unaltered estuarine and freshwater habitats in coastal Ecuador, but is readily accessible from Guayaquil on a paved road. From the marsh one can hear Horned Screamers calling on one side and the voices of Howler Monkeys coming from the still forested hills that rise to the west. Thus field studies of the Comb Duck and Horned Screamer, species uncommon or relatively inaccessible anywhere else, should be now entirely possible at the reserve, and could aid in building up conservation efforts for the area and these keystone species.

Acknowledgements

I thank Lino Delgado and Freddy Zambrano of the Forestry Directorate of Ecuador (DINAF) for making a canoe and car available for the Manglares-Churute field trip and for their companionship. I also want to acknowledge the help of Paul Greenfield, who has been a generous source of data on Ecuadorean birds, that of Robert Ridgely for making his unpublished notes on non-passerine birds from Ecuador available to me, and the comments on the Comb Duck offered by Professor Gustavo Orces, whose wisdom on Ecuadorean faunal matters is only paralleled by his vitality and cheerful conversation. I am very grateful to Dr D. W. Snow for greatly improving the final draft of this paper.

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The status of *Onychognathus nabouroup benguellensis* (Neumann)

by A. J. F. K. Craig

Received 20 January 1988

The Palewinged Starling *Onychognathus nabouroup* is found locally throughout the dry western areas of southern Africa (Fig. 1). In contrast to other members of the genus, the sexes are alike with glossy black plumage and a bright orange-yellow iris. The outer vanes of the 5 outer primary remiges are chestnut-brown, but the inner vanes are creamy white in all cases.

O. nabouroup was described by Daudin (1800) on the basis of material collected by LeVaillant, who called it "le nabouroup" after the Hottentot name for the bird (LeVaillant 1799). The type locality is Kamiesberg (30°19′S, 18°04′E) in the western Cape Province, South Africa. Reichenow (1903) described a larger race with a darker wing patch, *O. n. intensetincta*, on the basis of material from Port Elizabeth. This is unlikely to have been the collecting locality, since *O. nabouroup* has not been recorded within 100 km of Port Elizabeth subsequently. Sclater (1911) noted that he had been unable to find the specimen on which this race was based, although Reichenow (1903) had stated that it was in the British Museum (Nat. Hist.) (BMNH). Sclater (1930) regarded *O. n. intensetincta* as a synonym of the nominate race, and all subsequent authors have followed suit. Neumann (1903) described *O. n. benguellensis* as similar to the nominate race, but with a pure white wing patch, rather than the buff or cream remiges of birds from other regions. Winterbottom (1961) examined a small sample of specimens and questioned the validity of this race, but it has been retained in the standard checklists (Clancey 1980).

In the course of a comparative study of the Redwinged Starling *O. morio* and the Palewinged Starling, I have examined nearly all of the available museum material of *O. nabouroup*. In addition to checking all specimens for moult, I took standard measurements of wing, tail, tarsus and culmen length, as well as measuring culmen depth and width at the anterior border of the nostril.

The type specimen of *O. nabouroup benguellensis* is in the BMNH at Tring. It is an unsexed, undated flat skin from Benguella in Angola (12°34′S, 13°24′E), with the following measurements (mm): wing 135, tail 104, tarsus 30.3, culmen 26.6. Clancey (1980: 253) notes that racial

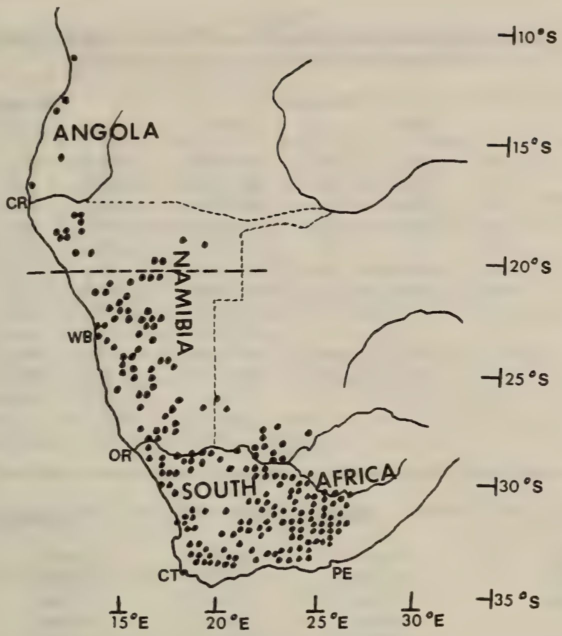

Figure 1. The distribution of the Palewinged Starling *Onychognathus nabouroup*, based both on museum specimens and other records. Dots indicate localities plotted on the quarter-degree square system; the dashed line separates northern and southern birds as described in the text. Points of reference along the coast are the Cunene River (CR), Walvis Bay (WB), the Orange River (OR), Cape Town (CT) and Port Elizabeth (PE).

variation in this species is "reputedly clinal", and does not delimit their ranges on his map of the distribution of the 2 *Onychognathus* species in southern Africa. However, in the text Clancey (p. 254) gives the range of *benguellensis* as the Kaokoveld, northwestern Namibia, and southern and coastal Angola.

Specimens from Angola are few, so I initially divided the material into 2 groups: birds south of 21°S, and birds north of this line (Fig. 1). Their measurements are compared in Table 1. While the mean measurements for southern birds are larger than those for northern birds, there is considerable variation within each group, and an analysis of variance showed that only the wing lengths of female birds differed significantly between the 2 populations. Wing-length is significantly correlated with latitude in both sexes, but tail- and tarsus-length are not (Table 2). The pattern of size variation in this species is not an obvious cline as defined in Campbell & Lack (1985).

Colour of the remiges is a poor differentiating character. Sharpe (1904) remarked that the type specimen of *benguellensis* was indistinguishable from Damaraland birds, and Hoesch & Niethammer (1940) concluded that their specimens from Damaraland, Namibia belonged to the nominate race, since none had pure white remiges as described by Neumann

TABLE 1

Comparative measurements (mm) of 'northern' (n = 7 ♂♂, 11 ♀♀) and 'southern' (n = 50 ♂♂, 42 ♀♀) specimens of *Onychognathus nabouroup*.

		Males			Females		
		Mean	±sd	Range	Mean	±sd	Range
Wing-	N	141.3	4.5	136–150	134.8	4.1	128–141
length	S	145.2	5.7	129–156	139.8	4.8	128–151
Tail-	N	107.3	2.4	103–110	102.7	5.6	90–111
length	S	108.4	5.7	98–121	104.7	4.5	90–112
Tarsus-	N	33.5	0.5	32.8–37.6	32.0	1.4	29.2–33.8
length	S	33.2	1.5	29.8–34.3	32.6	2.0	28.8–37.0
Bill-	N	28.3	1.3	26.2–29.9	27.3	0.9	25.7–28.8
length	S	28.8	1.4	26.0–31.9	27.6	1.7	24.4–29.8
Bill-	N	6.7	0.3	6.1–7.1	6.4	0.4	6.0–7.1
depth	S	6.7	0.4	5.7–7.6	6.6	0.7	5.9–8.6
Bill-	N	5.8	0.3	5.5–6.2	5.4	0.3	4.8–5.8
width	S	5.6	0.3	5.1–6.2	5.7	0.9	4.9–8.5

TABLE 2

Correlations of *Onychognathus nabouroup* measurements with latitude

	Males (n = 66)		Females (n = 57)	
	r	P	r	P
Latitude *v* tail	0.1344	0.283	0.1852	0.161
Latitude *v* wing	0.4571	<0.002	0.5347	<0.002
Latitude *v* tarsus	0.1843	0.142	0.2388	0.076
Tail *v* wing	0.6667	<0.001	0.6080	<0.001
Tarsus *v* wing	0.4681	<0.002	0.5594	<0.002
Tarsus *v* tail	0.3818	<0.002	0.3154	<0.020

(1903) for *benguellensis*. Macdonald (1957) also noted that the colour of the remiges varies greatly in birds from Namibia. However, Sharpe (1904) recognised the race *intensetincta* and used this name for specimens from Deelfontein, Cape Province. I have examined some 20 specimens from this locality, which show considerable variation and do not all agree with Sharpe's criteria for *intensetincta*.

It appears that there is some geographical variation in this species, with the largest birds furthest south. There are no plumage characters which serve to differentiate populations, and distribution is continuous, with considerable local movement in dry periods (pers. obs.). The additional material examined since my original study (Craig 1983) confirms that the timing of moult is similar throughout the range of the species, while the breeding season may vary. Thus I conclude that the race *O. n. benguellensis* does not warrant recognition, and the Palewinged Starling should be treated as a monotypic species.

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I am grateful to M. LeCroy and R. W. Dickerman, American Museum of Natural History, P. Colston and A. Vale, British Museum (Natural History), J. Mendelsohn, Durban Natural History Museum, C. J. Vernon, East London Museum, W. S. Lanyon, Field Museum of Natural History, K.-L. Schuchmann, Museum Alexander Koenig, R. L. Zusi, United States National Museum, J. Komen, Windhoek Museum, and H. D. Jackson, Natural History Museum of Zimbabwe, for access to material in these collections and for other assistance. Funds were provided by the Council for Scientific and Industrial Research, the Southern African Ornithological Society and Rhodes University.

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Extra rectrices in Olivaceous Cormorants *Phalacrocorax olivaceus*

by Douglas Siegel-Causey

Received 23 January 1988

Abnormal numbers of tail feathers in birds occur infrequently, but the phenomenon has been observed in many orders and families (see Somadikarta 1984, Hanmer 1985, and Saini & Toor in this issue). Unlike in passerines, where abnormalities most often involve a reduction in number, in non-passerines the pattern seems to be of supernumerary rectrices (Hanmer 1985: Table 1). Although extra rectrices are known for many anseriform, charadriiform, and galliform species (Melville 1985), there are few reports of abnormal numbers in the Pelecaniformes; Broekhuizen & Liversidge (1954), for example, found no abnormalities in rectrix number in a sample of c. 3700 Cape Gannets *Morus capensis*. During the course of a family-wide survey of the Phalacrocoracidae, I had the opportunity to examine tail moult in 1272 individuals in 7 species, in both museum collections and field specimens.

All except 14 (1.02%) of the cormorants and shags had the normal number of rectrices, which is 12 except for the Red-legged Shag *Phalacrocorax gaimardi*, which has 14. None of the 14 had a reduced number, and all but one were Olivaceous Cormorants *Phalacrocorax olivaceus* (Table 1), each of which had 2 extra tail feathers; a few appeared

TABLE 1
Specimens examined and frequency of occurrence of extra tail feathers in Phalacrocoracidae.

Species	No. of rectrices	Deviation from normal rectrix number (No. individuals) None	+1	+2
Brandt's Cormorant *Phalacrocorax penicillatus*	12	41	0	0
Double-crested Cormorant *Phalacrocorax auritus*	12	280	0	0
Olivaceous Cormorant *Phalacrocorax olivaceus*	12	390	0	13
Blue-eyed Shag *Phalacrocorax atriceps*	12	108	0	0
New Zealand Shags *Phalacrocorax carunculatus* s.l.	12	121	0	0
Rock Shag *Phalacrocorax magellanicus*	12	110	0	0
Pelagic Shag *Phalacrocorax pelagicus*	12	139	1	0
Red-faced Shag *Phalacrocorax urile*	12	13	0	0
Red-legged Shag *Phalacrocorax gaimardi*	14	58	0	0

to have only one, but more careful examination usually revealed evidence of a recently moulted feather. Wetmore (1926) reported an Olivaceous Cormorant in the Museum of Vertebrate Zoology, Berkeley, collected from western Argentina as having 13 tail feathers; but closer examination of this specimen (MVZ 42836) revealed the presence of a newly emerged feather bud opposite the side with the extra feather. Tail moult in the Phalacrocoracidae is complex and frequently asymmetrical (Stresemann & Stresemann 1966), and obtaining a correct count of rectrices in museum skins can be difficult, especially when many feathers have been lost. Some specimens, for example, collected in the field had only 3 visible tail feathers; the rest had just moulted or were budding.

The geographic distribution of Olivaceous Cormorants with 12 and 14 rectrices throughout South America is shown in Figure 1. Not shown are 17 specimens from Central America and 62 from Mexico and the United States, all of which had 12 rectrices. Individuals with supernumary tail feathers were restricted to the southwestern part of South America, 3 of them from a single locality, Islas Chinchas, Peru (13°39′S, 76°25′W) (Fig. 1).

The frequency of occurrence of extra tail feathers in Olivaceous Cormorants is about half that seen in some other non-passerines, but is the highest so far observed in the Pelecaniformes. It is difficult to compare these results accurately with other observations (cf. Cramp & Simmons 1977, Somadikarta 1984, Hanmer 1985, Melville 1985, etc.) because the dates of collection of the specimens I examined spanned a century, and the proportion of individuals with extra tail feathers in the entire population at any one time may be insignificant considering the period of time

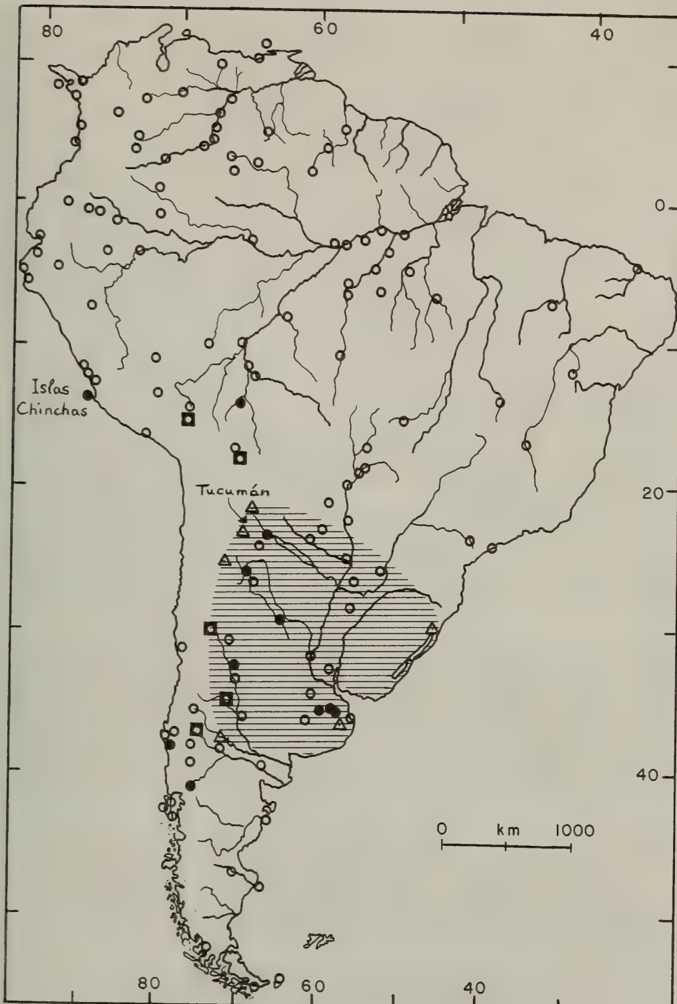

Figure 1. South American specimens of Olivaceous Cormorants *Phalacrocorax olivaceus*. Open circles are birds with 12 rectrices; dark circles are those with 14; open black squares are birds with blue irides. Triangles are ringed birds recovered at the extreme limits of the area of observed dispersal (shaded) from the ringing site at Tucumán.

during which the specimens were collected. This, however, does not affect the geographically localized nature of the phenomenon, nor its disproportionate occurrence in Olivaceous Cormorants.

In the only ringing study published on South American Olivaceous Cormorants, Olrog (1975) found that individuals marked in Tucumán, northern Argentina (Fig. 1) dispersed primarily to the southeast along

drainages of the Paraná River. None appeared in the north or northeast; but these regions of the Chaco and Mato Grosso are sparsely inhabitated and by people unlikely to report ring recoveries. There is some evidence that Olivaceous Cormorants from the southern 'cone' of South America have minimal contact with populations north and east of the boundary ranges of the Amazonian Basin (unpubl. data). Further support for a distinct southern population of Olivaceous Cormorants is afforded by the occurrence of another morphological variant, ie. individuals with light blue instead of green or light brown irides (Fig. 1); these individuals were collected only in the eastern foothills of the Andes from southwestern Argentina to central Peru. Two of the 5 birds with blue irides also had 14 tail feathers, one of which was Wetmore's (1926) specimen.

The relatively high number of birds with extra rectrices from Islas Chinchas and the relatively restricted distribution of the other 14-rectrix birds suggests a simple genetic component to rectrix number, possibly analogous to that found in discrete plumage states (eg. 'bridling' in murres–Jeffries & Parslow 1976), rather than a randomly occurring mutation. The co-occurrence of the 'blue-eye' variants in the same region with the '14-rectrix' variants suggest that gene flow between the southern population and the northern and Amazonian populations is low. If so, this argues against the notion that *P. olivaceus* is a single, panmictic, continent-wide race or species (eg. Blake 1977).

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I thank the following curators and museums for assistance in borrowing or examining specimens: G. F. Barrowclough (American Museum of Natural History), G. S. Cowles (British Museum of Natural History), J. W. Fitzpatrick (Field Museum of Natural History), N. K. Johnson (Museum of Vertebrate Zoology, UC Berkeley) and R. L. Zusi (US National Museum of Natural History). This research was partially supported by the National Science Foundation, grant BSR 8407365, and by the Museum of Natural History, Univ. Kansas.

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Bulletin of the

British Ornithologists' Club

Edited by
Dr J. F. MONK

Volume 108 No. 4 December 1988

FORTHCOMING MEETINGS

Tuesday, 7 February 1989 at 6.15 p.m. for 7 p.m. in the Senior Common Room, Sherfield Building, Imperial College, S.W.7, **Dr Algirdas Knystautas** will speak on **"Birds of the Soviet Union".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the Hon. Secretary at 2 Chestnut Lane, Sevenoaks, Kent TN13 3AR by first post on Tuesday, 24 January 1989, if possible*.

Dr Knystautas from Vilnius, Lithuania, USSR is a leading Soviet ornithologist, whose work has covered all parts of the USSR, and has a wide knowledge of the Soviet avifauna, including endemic species. He will illustrate his address with slides and his photography is of a very high standard. His last book published in London came out last year and his next, with the same title as his address to the Club on this occasion, is to be published a year hence.

Tuesday, 14 March 1989 at 6.15 p.m. for 7 p.m. at the same place, **Dr Werner Suter** from Zurich will speak on **"Cormorants wintering in Switzerland".** Those wishing to attend should send their acceptance with a cheque for £5 per person to reach the Hon. Secretary (address above) by first post on Tuesday, 28 February 1989, if possible*.

Dr Suter carried out this study for the Federal Agency for Environmental Protection, with support from Vogelwarte Sempach and other organizations. The subject is of special interest in view of the increase in population of the Cormorant in western Europe and he will be speaking particularly on its feeding ecology.

Tuesday, 9 May 1989 at the same place, **Dr R. A. F. Cox** will speak on **"North Sea Birds".**

Tuesday, 13 June 1989 at the same place, the **Revd. T. W. Gladwin** will speak on **"Birds around Lake Erie".**

Tuesday, 25 July 1989 at the same place, **Dr Margaret Carswell** will speak on **"The Uganda Atlas of Birds".**

*It will be possible to take acceptances up to the weekend before a Meeting, but Members are asked to accept by 14 days before a Meeting, if they possibly can, to avoid a substantial number of late acceptances, as we have to notify approximate numbers 14 days before a Meeting.

A plan showing Imperial College will be sent to Members who request it when sending their acceptance for a Meeting.

Bulletin of the
BRITISH ORNITHOLOGISTS' CLUB

Vol. 108 No. 4 Published: 19 December 1988

Dr C. C. H. Elliott has sent the following abstract of his talk to the Club on 11 July 1988:

The Red-billed Quelea *Quelea quelea* is an astonishing ornithological phenomenon, including that it is the most numerous bird in the world, that it is the worst vertebrate pest of agriculture and that it is the most studied bird species in Africa. Does it deserve this reputation? Only one estimate of the quelea's population has been published (10^9 to 10^{11}—Crook & Ward 1968). A reassessment of the population using breeding, rather than mortality data from control operations, suggests that there are about 1500 million individuals following reproduction, which still makes the species clearly the most numerous in the world.

Large numbers of a species are normally considered an indication of at least temporary success. Aspects of the quelea's biology which make it successful include the wide distribution of the races of the species, the diet and feeding behaviour, the rapid reproduction and itinerant breeding behaviour, and its migration patterns. Amongst recent findings in the last few years it has been shown that a complete range of racial distinction occurs in all areas, suggesting that the races may be invalid; that food choice between natural and cultivated grain is much more complicated than had been originally thought; that repeated breeding can take place in the same area when the rains are prolonged, and is accompanied by an unusual pattern of moult for a passerine; that skews in sex ratio previously reported may be due to sex segregation at certain times of the year; and that there is group cohesion on migration.

While the quelea can cause severe local damage to wheat, rice, sorghum and millet, causing hardship to individual or small groups of farmers, overall the direct impact in terms of grain lost is small, though indirect losses, due to psychological discouragement of farmers, are hard to evaluate. But, together with the conspicuousness of the birds, losses have led to the quelea sometimes being described as an agro-political pest. At present the species is controlled mainly by aerial spraying with organophosphate avicides, a technique often highly effective, but also very expensive. The Governments concerned appear to find the techniques worthwhile as much from the political point of view as from the agricultural benefits. There are some negative environmental side-effects, particularly on raptors, and these are being further studied. However, the areas being sprayed in quelea control operations are very small in agricultural terms and are unlikely to effect population levels of the raptors concerned, since the avicide is not persistent. Possibilities exist of exploiting the quelea as a food resource which, if pursued, might eventually change the species' status from a pest to a resource.

Dr C. C. H. Elliott, F.A.O./U.N.D.P. Crop Protection Project, KEN/85/009, P.O. Box 30470, Nairobi, Kenya.

ANNUAL GENERAL MEETING

The Annual General Meeting of the British Ornithologists' Club was held in the Senior Common Room, Imperial College, London S.W.7 on Tuesday, 10 May 1988 at 6 p.m. with the Reverend G. K. McCulloch in the Chair. 13 Members were present.

The Minutes of the Annual General Meeting held on 12 May 1987 (*Bull. Brit. Orn. Cl.* 107: 45) were approved and signed by the Chairman.

The Report of the Committee for 1987 was presented and, on the proposal of Mr D. Griffin, seconded by Mr D. R. Calder, it was unanimously received and adopted.

The Editor reported that contributions to the *Bulletin* were of a very high standard and more than sufficient to justify the increased number of pages published in 1987.

There having been no additional nominations, the following were declared duly elected:

Honorary Treasurer: Mrs D. M. Bradley (re-elected)
Honorary Secretary: Mr R. E. F. Peal (re-elected)
Committee: Mr R. H. Kettle (*vice* Mr K. F. Betton who retired by rotation and was ineligible for re-election)

Due notice having been given (*Bull. Brit. Orn. Cl.* 108:3), it was proposed by the Committee as a Special Resolution "That the redrafted Rules of the Club initialled and dated by the Chairman for the purpose of identification be approved". Due notice having been given, the following amendment was proposed by the Honorary Secretary and seconded by the Editor: "That there be added after 'approved' the words 'and shall come into force as soon as they shall be approved by the Charity Commission' ".

The amendment was carried unanimously and the amended Motion, proposed by the Honorary Secretary and seconded by the Honorary Treasurer, was also carried unanimously.

On the proposal of the Honorary Treasurer, seconded by the Honorary Secretary, it was unanimously agreed to adjourn the Meeting until 6 p.m. on 11 July 1988 at the same place for presentation and acceptance of the Accounts for 1987.

The Meeting adjourned at 6.25 p.m.

The Annual General Meeting of the British Ornithologists' Club, adjourned from 10 May 1988, was resumed on 11 July 1988 in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 at 6 p.m. with the Revd. G. K. McCulloch in the Chair. Six Members were present.

The Accounts for 1987 not being ready, it was proposed by Mr N. H. F. Stone, seconded by the Editor and agreed that the Meeting be adjourned until 6 p.m. on 20 September 1988 at the same place.

The Annual General Meeting of the British Ornithologists' Club, adjourned from 11 July 1988, was resumed on 20 September 1988 in the Senior Common Room, Sherfield Building, Imperial College, London S.W.7 at 6 p.m. with the Revd. G. K. McCulloch in the Chair. Eleven Members were present.

Income and Expenditure Account for the year ended 31 December 1987

	1987 £	1987 £	1986 £	1986 £
INCOME				
Subscriptions received				
Members' subscriptions	3,233		2,946	
Subscribers	2,908	6,141	2,392	5,338
Donations received		43		17
Investment Income				
Stevens Bequest Fund	157		154	
Deposit interest	2,620		2,517	
Barrington Trust Fund	48	2,825	48	2,719
Rent received				
Property—Clovelly, Tring	2,210		2,080	
Less costs	129	2,081	112	1,968
Income Tax Recovered				
Deeds of covenant	255		256	
Other	63	318	65	321
Sales of Bulletin Back Issues		1,977		232
Meetings—Income	965		1,742	
—Expenditure	852	113	1,793	(51)
		13,498		10,544
Expenditure				
Printing, publication of Bulletin	7,085		6,408	
Separates	480		525	
	7,565		6,933	
Less: Reprints	319		280	
	7,246		6,653	
Postage of Bulletin	677		751	
Publication and Distribution Costs of current issues of Bulletin	7,923		7,404	
Reprinting Back Issues	1,026		—	
Printing, postage and stationery	224		464	
Telephone	12		65	
Insurance	26		13	
Notice of meetings	53		118	
Accountancy	130		130	
Miscellaneous—expenses	120		69	
Bank charges	7		14	
		9,521		8,277
Excess of Income over Expenditure		£3,977		£2,267

Balance Sheet as at 31 December 1987

	1987 £	1987 £	1986 £	1986 £
General Fund				
Balance at 1 January 1987	21,205		18,938	
Add: Excess of income over expenditure	3,977		2,267	
Provision made in 1986, no longer required	520	25,702	—	21,205
Balance at 31 December 1987				
Trust Fund—F. J. F. Barrington Legacy				
Balance at 31 December 1987		445		445
Stevens Bequest Fund				
Balance at 1 January 1987	60,256		60,256	
Sale of Piano	350		—	
Balance at 31 December 1987		60,606		60,256
		£86,753		£81,906
Represented by:				
Stevens Bequest Fund Investment				
£2,101 $10\frac{1}{4}$% Exchequer Stock 1995 at cost		2,019		2,019
Barrington Trust Fund Investment				
£880 $5\frac{1}{2}$% Treasury Stock 2008/12 at cost		445		445
Freehold Property		58,000		58,000
		60,464		60,464
Current Assets				
Stock of Bulletin—Nominal Value	1		1	
Cash at bank —Current account	684		1,130	
—Post Office Giro	360		975	
—Deposit Account	7,564		6,347	
—National Savings Bank	22,549		18,938	
	31,158		27,391	
Current Liabilities				
Subscriptions received in advance				
—Members	775		732	
—Subscribers	1,529		1,824	
Sundry creditors	2,565		3,393	
	4,869		5,949	
		26,289		21,442
		£86,753		£81,906

We approve the attached accounts for the year ended 31 December 1987 and confirm that to the best of our knowledge all transactions relating to the Club have been recorded.

G. K. McCULLOCH *Chairman*
D. M. BRADLEY *Honorary Treasurer*

20 September 1988

The Accounts for 1987 were presented. It was proposed by Mr D. R. Calder, seconded by the Vice-Chairman, that the Accounts for 1987 be received and adopted and this was carried.

The Meeting closed at 6.05 p.m.

The seven hundred and eighty-second Meeting of the Club was held in the Senior Common Room, Sherfield Building, Imperial College, London S.W. 7 on Tuesday, 20 September 1988 at 7 p.m. The attendance was 27 Members and 12 guests.

Members present were: Revd. G. K. McCulloch (*Chairman*), Miss H. Baker, K. F. Betton, Mrs D. M. Bradley, D. R. Calder, S. J. W. Coles, I. D. Collins, P. J. Conder, J. H. Elgood, S. J. Farnsworth, Miss C. T. Fisher, D. J. Fisher, R. S. R. Fitter, H. S. Gibbons, B. Gray, D. Griffin, R. H. Kettle, Dr J. F. Monk, Mrs A. M. Moore, R. G. Morgan, Mrs M. N. Muller, P. J. Oliver, R. E. F. Peal, P. S. Redman, Miss S. Sassoon, R. E. Sharland and N. H. F. Stone.

Guests present were: Mrs J. B. Calder, Mrs F. M. Farnsworth, Mrs M. S. Fitter, C. Gibbons, Mrs M. C. Gibbons, Mrs Isabel McCulloch, P. J. Moore, C. A. Muller, Miss J. Patey, I. Proud, A. Swash and Mrs G. W. Swash.

During dinner, the Vice-Chairman, Mr D. Griffin, spoke briefly on a visit he made in May and June last to the B.O.U. Expedition to Colombia (*vide Bull. Br. Orn. Cl.* 108: 51).

Miss C. T. Fisher gave an illustrated and most interesting address on *Discovery of Australian Birds* in the period 1835–1850. A resumé will be published later.

SHORT INFORMAL COMMUNICATIONS BY MEMBERS AT MEETINGS

Short informal communications by Members on matters of current ornithological interest are welcome at Meetings during dinner. Members wishing to speak must previously inform the Chairman, whose address is 5 Roy Rd., Northwood, Middx. HA6 1EQ (Tel. 09274/27438), and should give him as much notice as possible. They should tell him their subject and the length of time they would like to speak. All such communications must be short as the time available is limited.

Notes on the status of some birds of Región X, Chile

by Pamela C. Rasmussen and Nancy López H

Received 16 January 1988

The present status of many species of birds, especially land birds, is poorly known in southern Región X (Llanquihue and Chiloé provinces), Chile (Fig. 1). Jehl (1973) surveyed winter seabirds in Región X; Devillers & Terschuren (1977, 1978) reported on migrant Charadrii-formes and seabirds in Región X in January; Clark *et al.* (1984) reported on birds of Isla Guafo (south of Chiloé Island); and Barría (1972) surveyed birds of the Dalcahue area, Chiloé Island. Because in coastal areas of Llanquihue and Chiloé provinces rapid and extensive deforestation, agricultural use, and hunting pressure are particularly heavy, and epi-demics of avian disease have been a serious problem, their populations of

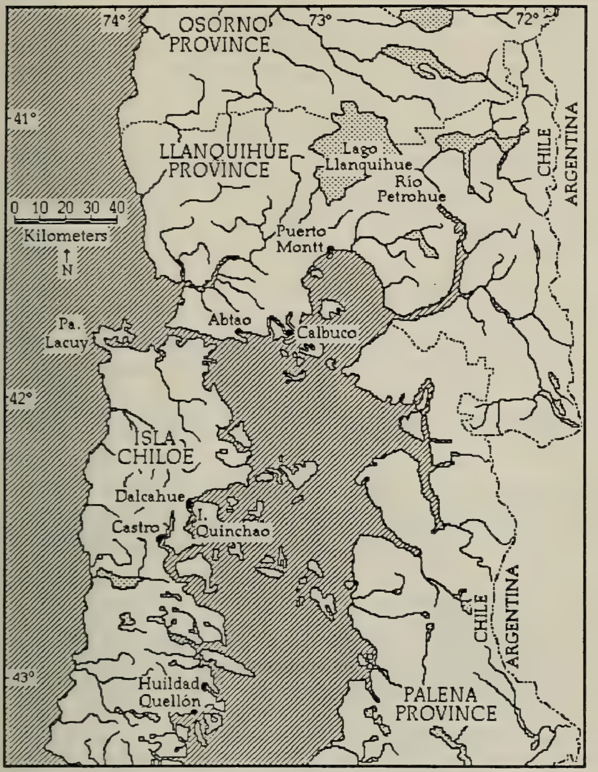

Figure 1. Map of Región X, Chile, showing localities mentioned in the text.

endemic land birds are of special concern. From 20 Dec 1986 to 9 Feb 1987 we undertook field work with P. S. Humphrey in coastal Región X, Chile. We obtained data on the status of several land birds in largely deforested areas, as well as on status and distribution of several sea bird species. A complete list of all species seen at each locality is available from PCR on request.

We camped at Abtao (40°30′S, 73°50′W), Llanquihue Province, 21 Dec 1986 to 9 Jan 1987, and near Puerto Inglés, Península Lacuy (41°47′S, 73°50′W), Chile, 10–19 January. PCR camped at Huildad (43°05′S, 73°35′W), Chiloé Island, 23–26 January, and at Calbuco (41°45′S, 73°05′W), Llanquihue Province, 27–29 January. All these localities are situated on bays, and are flanked by agricultural fields and bordered by patches of young second-growth forest or thickets of bamboo and blackberries.

CHILEAN TINAMOU ***Nothoprocta perdicaria***

Scarce, probably due to hunting and agriculture (Johnson 1965, Daskam & Rottmann 1984). We saw one alongside Route 5 at the northern exit to Valdivia on 18 Jan, and on 31 Jan one crossing the road 67 km north of Valdivia, and another 45 km south of Temuco (Región IX).

SILVERY GREBE *Podiceps occipitalis*

4 adults were present in a bay at Huildad on 24 Jan, one on 25 Jan, and 2 on 26 Jan. On 29 Jan we found a subadult in Calbuco Bay. Specimens (one collected at each locality) were moulting and flightless. Rare on salt water in Chile (Blake 1977, Araya & Millie 1986).

WHITE-TUFTED GREBE *Podiceps rolland*

Abundant in bays at all our field sites; many were moulting and flightless. Juveniles, subadults, and adults were usually together in flocks of 15–100. It has been considered primarily a fresh-water species in Chile (Blake 1977, Araya & Millie 1986).

MAGELLANIC OYSTERCATCHER *Haematopus leucopodus*

At Abtao we saw 1–5 juveniles on 5 days between 25 Dec and 5 Jan. At Huildad we saw 1–7 on our 4 days there; several birds were adults. One adult was seen at Calbuco on 28 Jan. These Abtao and Calbuco records extend the species' range slightly north of Chiloé Island, previously considered its normal northern limit (Murphy 1936, Johnson 1965, Blake 1977, Araya & Millie 1986).

CORDILLERAN SNIPE *Gallinago stricklandii*

López saw one in a moist grassy patch at forest edge, near the mouth of a small freshwater stream at Abtao on the evening of 31 Dec. Rarely found this far north in Chile (Johnson 1965).

HUDSONIAN GODWIT *Limosa haemastica*

Common at Abtao where a flock of c. 50 was usually present. Flocks were also seen on Isla Quinchao and Quellón. Considered only sporadic in this region by Johnson (1965) and Blake (1977).

POMARINE SKUA *Stercorarius pomarinus*

2 seen at Abtao on 24 Dec, 3 on 27 Dec, and 2 each on 5 and 6 Jan. About half were juveniles, and most adults were moulting the central tail feathers. We differentiated this species from the Arctic Skua *S. parasiticus*, also present at Abtao, by the Pomarine's larger size, its proportionately shorter stiffly held wings, mottled breast band and sides (in adults), and in some individuals the auxiliary white wing patch. Rare in Chilean waters (Araya & Millie 1986), but several were seen at Abtao in 1983 (P. S. Humphrey).

DOLPHIN GULL *Leucophaeus scoresbii*

Two subadults were seen with other gull species at Abtao on 27 Dec (one was collected). On 28 Dec one subadult and 2 adults in breeding plumage were seen there, one subadult on 29 Dec and 2 on 30 Dec. These records are a slight northerly extension of the previous range limit, Chiloé Island (Murphy 1936, Blake 1977, Araya & Millie 1986).

COMMON TERN *Sterna hirundo* and SOUTH AMERICAN TERN *Sterna hirundinacea*

Flocks of hundreds of non-breeding terns were present daily at Abtao and Calbuco. About half had dusky-tinged red bills, red legs, and tail streamers projecting beyond the wingtips at rest. We collected 5 of these red-billed specimens at Abtao; they proved to be the South American

Tern *S. hirundinacea* on the basis of measurements. We therefore concluded that the flocks of mostly red-billed terns were *S. hirundinacea*, the common species of southern Chile. Of the rest of the birds, all had black bills, often tinged red at the base, and those seen well had red-orange legs, relatively short tails, and lacked translucent patches on the primaries. None was seen with black legs nor any with translucent patches on the primaries, thus excluding the Arctic Tern *S. paradisaea*. 3 black-billed, red-orange-legged terns were collected (University of Kansas Museum of Natural History nos. 83516, 83517, 83566) and verified as Common Terns on the basis of measurements (see Clapp *et al.* 1983). Thus we feel certain that nearly all, if not all of the black-billed terns were *S. hirundo*, rather than *S. paradisaea*, whose range is also poorly known in Chile (Hellmayr 1932, Murphy 1936, Oyarzo & Cekalovic 1982, Araya & Millie 1986). The Common Tern has been thought to occur only casually along the Chilean coast (Araya & Millie 1986).

ELEGANT TERN *Sterna elegans*

1–3 were seen on each of 7 dates at Abtao, 5 at Puerto Montt on 21 Jan, and 1–20+ on 3 dates at Calbuco. They usually associated with other terns and gulls; all Elegant Terns seen were in non-breeding plumage. The Abtao and Calbuco records are a slight southern extension of this species' range, listed as Puerto Montt (Devillers & Terschuren 1977).

CHILEAN PIGEON *Columba araucana*

We usually saw 1–8 each day in Llanquihue Province, at Abtao and ríos Pescado (on Lago Llanquihue) and Petrohue, and 2 in heavy forest near Valdivia on 31 Jan. Usually they were flying over cultivated areas or in forest borders and patches. This species was nearly exterminated 1953–1955 by Newcastle's Disease (Johnson 1967), and possibly Diftero-viruela aviar (Cubillos *et al.* 1979), and is thought by some to be rare throughout its range (Clark 1986). Cubillos *et al.* (1979) have reported gains in numbers and range, Glade (1977) reported 48 in Parque Nahuelbuta (37°48′S, 73°04′W), and we found it common in Llanquihue Province.

SLENDER-BILLED PARAKEET *Enicognathus leptorhynchus*

We saw flocks of 3–50 south of Puerto Montt, Abtao, Península Lacuy, Huildad, and Río Petrohue, usually in second-growth forest and isolated trees. Has been reduced in numbers as a result of deforestation and Newcastle's Disease (Johnson 1967, Daskam & Rottmann 1984), but we found it fairly common in Región X. Barría (1977) considered it the most serious avian agricultural pest on Chiloé Island.

DES MURS' WIRETAIL *Sylviorthorhynchus desmursii*

Rather common in patches of dense vegetation, especially bamboo and blackberries, at all our field sites in Región X. We found it at 1–3 m in small thickets in largely deforested areas. Considered uncommon on Isla Mocha in thickets bordering forests (Housse 1924) and rather common at Dalcahue (42°23′S, 73°40′W), Chiloé Island (Barría 1972).

BLACK-THROATED HUET-HUET *Pteroptochos tarnii*

Rather common at Abtao in small patches of dense vegetation, especially bamboo. Usually seen walking on horizonal limbs and mats of

bamboo 2–3 m above the ground. Also found at Río Petrohue, c. 10 km south of Castro, and at Huildad, in small thickets in deforested areas. Previously considered exclusively a forest inhabitant (Johnson 1965).

CHUCAO TAPACULO ***Scelorchilus rubecula***

Very common at Abtao in patches of dense vegetation; also in thickets in largely deforested areas at Huildad and 10 km south of Castro. According to Johnson (1965), it is entirely a forest dweller.

ANDEAN TAPACULO ***Scytalopus magellanicus***

Uncommon in forest patches at Abtao; more common in dense bamboo in non-forested areas near Puerto Inglés. Barría (1972) found this species rare at Dalcahue.

OCHRE-FLANKED TAPACULO ***Eugralla paradoxa***

Rather common in patches of dense vegetation (especially bamboo) at Abtao, and one was heard in a thicket in a deforested area c. 10 km south of Castro on 17 Jan. Housse (1924) found it rather common in thickets on Isla Mocha, but Barría (1972) found it very scarce at Dalcahue.

Several of the birds usually considered to be forest species in Chile were common in deforested areas with thickets and scattered trees in Región X (e.g. the 4 tapaculos, Des Murs' Wiretail, Chilean Pigeon, Slender-billed Parakeet). The wiretail, especially, appears to be largely restricted to edge habitats such as are created by deforestation. In contrast, we did not see the Magellanic Woodpecker *Campephilus magellanicus*, Rufous-tailed Hawk *Buteo ventralis*, White-throated Treerunner *Pygarrhichas albogularis* and Patagonian Tyrant *Colorhamphus parvirostris*, and we suspect that most of these species require less disturbed habitats.

Acknowledgements

We thank P. S. Humphrey for guidance and help, the Dirección Nacional de Fronteras y Limites del Estado; the Servicio Nacional de Pesca; the División de Protección de los Recursos Renovables, Servicio Agrícola y Ganadero; the Dirección General de Movilización Nacional, Ministerio de Defensa Nacional for permits. We were aided by M. Salaberry, A. M. Veloso, T. G. Iriarte, Universidad de Chile; P. Valenzuela, Embassy of Chile; J. E. Llaiquén, Pargua; O. C. de Soto, Ancud; O. Meza R., Asunción; B. Mayer and R. and B. Gibson, Buenos Aires; J. Navas, Museo Argentino de Ciencias Naturales. This field research was funded by the Frank M. Chapman Memorial Fund of the American Museum of National History, the University of Kansas, the Kansas University Endowment Association, the Humphrey family, and National Science Foundation grant no. BSR 84-078365 to Humphrey and Siegel-Causey.

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Comments on recently described new species of hermit hummingbirds

by Christoph Hinkelmann

Received 23 January 1988

Since 1966, 11 species of hummingbirds have been described as new to science. Before their validities could be independently evaluated (Mayr & Vuilleumier 1983, Vuilleumier & Mayr 1987), some of them, depending on the date of their description, were included in major ornithological check-lists (e.g. Meyer de Schauensee 1970, Parker *et al.* 1982, Wolters 1975–1982). Four of these new species are placed within the genus *Phaethornis* and 3 in *Threnetes*, both in the hermit subfamily (Phaethornithinae). Because this well-defined group comprises merely c. 10% of the total number of hummingbird species, and because 3 species soon after their discoveries were included in the ICBP Bird Red Data Book (King 1981), it became evident that a careful (re-)examination of all available information on these 7 hermit hummingbirds was highly desirable.

Unfortunately, most of the type specimens are preserved in the Museu de Biologia Prof. Mello Leitão in Santa Teresa, Espirito Santo, Brazil, and therefore are difficult of access (T. A. Parker, H. Sick). Thus, I have been able to examine only one type specimen, *Phaethornis koepckeae* (AMNH). Nevertheless, in this paper I try to evaluate the validity of 7 newly described species of hermit hummingbirds, a study in part stimulated by the recent comments of Vuilleumier & Mayr (1987). Revisions are summarised in Table 2.

Museum acronyms used:—

AMNH:	American Museum of Natural History, New York
ANSP:	The Academy of Natural Sciences of Philadelphia
CMNH:	Carnegie Museum of Natural History, Pittsburgh
FMNH:	Field Museum of Natural History, Chicago
LSUMZ:	Louisiana State University, Museum of Zoology, Baton Rouge
MCZ:	Museum of Comparative Zoology, Harvard University, Cambridge
MNRJ:	Museu Nacional do Rio de Janeiro
MZUSP:	Museu de Zoologia da Universidade de São Paolo
NMFS:	Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt/Main
UMMZ:	University of Michigan, Museum of Zoology, Ann Arbor
ZFMK:	Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn
ZMK:	Zoologisk Museum København
ZSM:	Zoologische Staatssammlung, München

Phaethornis margarettae, KLABIN FARM LONG-TAILED HERMIT or MARGARETTA'S HERMIT

Based on 10 specimens, Ruschi (1972) described this species from a single patch of forest, Klabin Farm, Conceição da Barra, in northern Espirito Santo, Brazil. However, its probable range is much larger, because additional specimens had been overlooked. L. A. P. Gonzaga informs me of the existence of further specimens:

MZUSP No. 63569, ♂, Vicência, Pernambuco, 8.6.1971, coll. by an expedition of the MZUSP;

MNRJ No. 34349, ♀, 17 km W Valença, Bahia, 15.10.1983, coll. Teixeira and Puga;

MNRJ No. 33827, ♂, Pedra Branca, Murici, Alagoas, 3.5.1984, coll. Teixeira.

All 3 specimens are labelled '*Phaethornis superciliosus*'. Recently, Teixeira *et al.* (1987) reported that the last mentioned specimen represents a noticeable range extension of the species. In addition, D. M. Teixeira informs me that in January 1987 he collected 3 additional specimens (2♂♂, 1♀, MNRJ Nos. 34939–34941) of '*P. superciliosus*' in 'Serra Branca' (=Pedra Branca), Murici, Alagoas, "where it is a rather common bird". Also, I found 2 specimens in the MCZ collection (Nos. 28323,

28324), determined as *Phaethornis superciliosus muelleri* from 'Pernambuco' (no collector, no date, purchased from W. J. Knowlton in March 1880). Ruschi (1973c) reported the species from the Rio Mucurí, S Bahia, and King (1981) mentioned a sight record of a hermit hummingbird in the Sooretama Biological Reserve, Espirito Santo, by R. S. Ridgely, that could have been *P. margarettae*.

Although their geographic ranges are separated by at least 2000 km, morphologically '*P. margarettae*' closely approaches the *P. superciliosus*/*malaris* species group from Amazonia. In this group Zimmer (1950) regarded all but one of the many subspecies usually considered conspecific with *P. superciliosus* as forms of *P. malaris*, which was, in contrast, considered monotypic by Peters (1945). However, for the most recent taxonomic treatment see Eisenmann in Meyer de Schauensee (1966).

Within this controversial species group, '*P. margarettae*' appears to be indistinguishable both in colouration and size from *P. malaris insignis*, found south of the Amazon between the lower Rios Tapajós and Madeira—a colour plate is given in Ruschi (1982) and a colour photograph in Ruschi (1986). Ruschi (1972) stated that he had compared the type series with examples of *P. malaris* (*sensu* Zimmer 1950), but it is evident that he examined only birds of the nominate subspecies from French Guiana and Amapá, Brazil, which are distinctly larger and darker in colouration than *P. malaris insignis* and the other subspecies of South America.

Ruschi (1972, 1973c) considered '*P. margarettae*' to be a bird of primary rain forest, a vegetation type once bordering the coast of southeastern Brazil for several thousand kilometres. T. A. Parker tells me he assumes that '*P. margarettae*' inhabits the coastal lowlands and is thus separated from its ecological counterpart of higher elevations, *P. eurynome*. The latter species occurs mainly in forests above 800 m in the northern parts of its range (states of Rio de Janeiro, Espirito Santo, S Bahia). Regrettably, the coastal rain forests of SE Brazil are nearly completely destroyed. Collar (1987) recently reported that "the Klabin Farm Long-tailed Hermit, endemic to the forest, is almost certainly gone (if it ever existed: perhaps it was not a valid species)".

Zoogeographically, '*P. margarettae*' provides a puzzling problem. Assuming that a connection may have once existed between the lowland forests of southeastern Brazil and Amazonia, the contact zone should have been in Maranhão and E Pará (T. A. Parker), where, in fact, the rain forest areas are inhabited by *P. superciliosus muelleri*, a taxon clearly distinct from both *insignis* and *margarettae*. (Based mainly on the colouration of the under tail-coverts and the rectrices' margins, I consider *muelleri* to be conspecific with nominate *superciliosus*, whereas *insignis* is more closely related to *P. malaris*.) Thus, the present range of *P. superciliosus muelleri* 'interrupts' the possible connection between the actual distribution of *P. malaris insignis* and '*P. margarettae*' . Grantsau (in Vuilleumier & Mayr 1987) "would place the species [*margarettae*] in the polytypic species *P. mulleri* (sic), as *P. mulleri* (sic) *margarettae*". Gonzaga *et al.* (MS) stressed that "*P. margarettae* . . . is at best a subspecies of *P. superciliosus*" (*sensu* Peters 1945). I agree in considering *margarettae* a subspecies of the *P. superciliosus*/*malaris* species group but prefer to treat it as *P. malaris*

margarettae until further information concerning its relationship to *P. malaris insignis* is available.

Phaethornis nigrirostris, BLACK-BILLED HERMIT

The description of *Phaethornis nigrirostris* by Ruschi (1973a) is based on a single bird from the Nova Lombardia Reserve, Espirito Santo, Brazil, in which only size differences and 5 morphological characters distinguish it from *P. eurynome*, the most important difference being the uniform black colouration of the bill. T. A. Parker, who was able to examine the type specimen in Santa Teresa, informed me that the mandible now exhibits traces of yellow and has probably never been completely dark. These traces of yellow, however, are not noticeable on the colour photographs accompanying the description of the species (Ruschi 1973a, 1982, 1986). The size and the colouration of the breast in *P. eurynome* are rather variable (probably due to age and sex). The other 3 morphological characters given by Ruschi (1973a) are of equally dubious value: these are a broader base to the bill, a lighter chin and throat, and green instead of bronze upperparts. These characters, however, commonly occur in *P. eurynome* as well. Differences in size are virtually non-existent: Ruschi's (1973a) measurements of total length (155 mm), tail length (62 mm) and weight (5 g) are all within the range of *P. eurynome*. "*P. nigrirostris*" does apparently differ from *P. eurynome* in wing length, but this character should be rechecked; unfortunately, a photograph of the type specimen beneath a mm scale (Ruschi 1973a) is not sufficiently clear to allow a precise measurement.

Accompanied by R. S. Ridgely, Sick (1979) observed a single Black-billed Hermit in the Nova Lombardia Reserve, recognizing it at once by its dark mandible. Based on this trip, Ridgely informed King (1981) that "*P. nigrirostris*" is outnumbered in its only known locality by *P. eurynome*. During a stay in the Nova Lombardia Reserve in September 1987, T. A. Parker found only typical *P. eurynome*. Obviously, neither habitat nor altitudinal segregation is evident between these "species" such as would be expected for closely related species of similar size. Even Ruschi (1973a, 1973d, 1982) stated that both share the same environment. (For habitat requirement of *P. eurynome* see, e.g. Scott & Brooke 1985, Snow & Snow 1986.)

Grantsau (in Mayr & Vuilleumier 1983 and in Vuilleumier & Mayr 1987) was the first to consider that the 2 'species' were in fact one, regarding "*P. nigrirostris*" as a young *P. eurynome*. However, examination of young specimens of *P. eurynome* (e.g. AMNH No. 188924) reveals at once that there is a sharp contrast between the light-coloured, primarily yellow base to the mandible and its dark tip. Thus, I consider "*P. nigrirostris*" to represent aberrant black-billed individuals occurring within the *P. eurynome* population in the Nova Lombardia Reserve, Espirito Santo, Brazil.

It is worth noting that Mayr & Vuilleumier (1983) indicate that the type specimen was alive when Ruschi originally described it. Ruschi (1973a), however, added to his description 2 photographs showing the unique individual of "*P. nigrirostris*" known at that time; one displays the living

bird, but the second is of a study skin compared with a specimen of *P. eurynome*.

Phaethornis koepckeae, KOEPCKE'S HERMIT

Phaethornis koepckeae is the only non-Brazilian hummingbird treated in this paper. Endemic to Peru, it was found first in the Cerros del Sira, Dpto. Huánuco, and then in the Río Marañon Valley, Dpto. Amazonas (Weske & Terborgh 1977). Today, *P. koepckeae* is known from 10 localities along the eastern margin of the eastern Andes between the Dptos of Amazonas and Madre de Dios (Davis 1986; unpublished museum specimens in FMNH, Río Palotoa, 12 km from mouth, Madre de Dios, and LSUMZ, 30 km SW Puerto Bermudez, Pasco; a map showing all localities is given by Hinkelmann 1987).

Due to important fieldwork conductd by parties of the FMNH and the LSUMZ, much new information is now available since the original description. At present there are at least 72 study skins extant, collected between 1969 and 1985 (FMNH: 37; LSUMZ: 30; AMNH: 3, including the type; ZFMK: 1, ZMK: 1). Thus, careful comparison can be made of morphological variation between *P. koepckeae* and its closest relative, *P. philippii*. Both species have a straight bill, and as stated by Weske & Terborgh (1977), they can be distinguished by the colouration of the face, throat and breast. *P. philippii* has a uniform, rich rufescent-buff throat and sides of neck, whereas *P. koepckeae* has the medial throat area white, the moustachial streak whitish, and the lateral throat area and sides of neck buffy-grey. In all these latter characters *P. koepckeae* is strikingly similar to *P. syrmatophorus columbianus*, a hummingbird clearly distinguished, however, by its strongly curved bill as well as by differences in colouration. *P. philippii* and *P. koepckeae* also differ from each other in size (see Table 1): *P. koepckeae* is slightly larger in all linear measurements than *P. philippii*, as suggested by Weske & Terborgh (1977) on the basis of 8 specimens only. However, Vuilleumier & Mayr (1987) indicated the contrary without providing any data for their conclusion. *P. koepckeae* is also slightly heavier than *P. philippii*.

P. koepckeae inhabits humid (lower) montane forests of the foothills along the eastern Andes in Peru at altitudes between c. 275 m (c. 900 ft, LSUMZ No. 75140) and 1075 m (FMNH no. 320596) (Davis 1986). Weske & Terborgh (1977) reported observations up to 1130 m, and estimated the main altitudinal distribution as 700–1000 m; but study skins at the FMNH indicate that the species is fairly common even below 700 m. In contrast, *P. philippii* is primarily a lowland, tropical zone species; it was found between 100 m (LSUMZ Nos. 114671–77, 114679–80) and 325 m (LSUMZ)—a large series collected in extreme northwestern Bolivia near Cobija, Dpto. of Pando (Parker & Remsen 1987).

Vuilleumier & Mayr (1987) treated *P. philippii* and *P. koepckeae* as allospecies. Undeniably, *P. philippii* is the nearest existing ally of *P. koepckeae*; the differences in size, colouration and habitat preferences, however, are equivalent to those between other closely related congeners, e.g., *P. superciliosus/malaris* and *P. syrmatophorus*, that are not treated as allospecies. Thus, I agree with Fitzpatrick (in Vuilleumier & Mayr 1987) in considering *P. koepckeae* a full species.

TABLE 1.
Measurements (mm, g) of *Phaethornis koepckeae* compared to those of *Phaethornis philippii*
Mean ± standard deviation biased (number of specimens examined) (range)

	Phaethornis philippii	*Phaethornis koepckeae*
♂ Bill length	34.65 ± 1.29 (55) (31.5–37.5)	37.44 ± 1.14 (39) 33–39.5)
♀ Bill length	31.55 ± 1.20 (43) (29–34.5)	34.48 ± 0.83 (32) (33–36)
♂ Wing length	62.57 ± 1.60 (56) (59–66)	66.88 ± 2.08 (16) (63–70) (from Tarapoto, San Martín) 62.93 ± 1.43 (22) (61–67) (from all other localities)
♀ Wing length	57.02 ± 1.42 (44) (54–60)	62.56 ± 1.01 (9) (61–64) (from Tarapoto, San Martín) 57.57 ± 1.29 (23) (55–61) (from all other localities)
♂ Body mass	4.84 ± 0.38 (31) (4.2–6.0)	5.25 ± 0.30 (37) (4.5–5.8)
♀ Body mass	4.19 ± 0.37 (17) (3.5–5.0)	4.69 ± 0.31 (28) (4.0–5.5)

All measurements were taken from museum specimens made available to me by: AMNH, ANSP, CMNH, FMNH, LSUMZ, NMFS, UMMZ, ZFMK, ZMK, and ZSM. Weights were taken from freshly collected specimens as indicated on their labels in: FMNH, LSUMZ, AMNH, and ZFMK.

Confirmation by U-tests: bill length, ♂: $Z = 7.31$, $p < 0.01$; bill length, ♀: $Z = 7.02$, $p < 0.01$; wing length, ♂: $Z = 3.58$, $p < 0.01$; wing length, ♀: $Z = 3.20$, $p < 0.01$.

Phaethornis maranhaoensis, MARANHÃO HERMIT

In another paper (Hinkelmann 1988) I have evaluated the characters used by Grantsau (1968) to separate "*P. maranhaoensis*" from its closest relatives, and I conclude that *maranhaoensis* is merely the previously undescribed adult male plumage of *P. nattereri*. Grantsau (1968) had based the description of "*P. maranhaoensis*" on 9 adult males. Vuilleumier & Mayr (1987), based on a comment from Grantsau, indicated that "there are now 9 specimens of this species". Thus no additional specimens have been collected since the time of the original description.

Threnetes grzimeki, BLACK BARBTHROAT or GRZIMEK'S BARBTHROAT

While making an inventory of birds of the isolated patch of forest belonging to Fazenda Klabin near Conceição da Barra, Espirito Santo, Brazil, Ruschi (1973b) found a bird that he described as a new species, *Threnetes grzimeki*. The description is based on a male (type) and 3 females from the type locality where "*Phaethornis margarettae*" was found for the first time as well (Ruschi 1972). Ruschi (1973b) indicated that he had compared "*T. grzimeki*" with the other species of that genus but had found only slight similarities. "*T. grzimeki*" is said to differ by the colouration of the tail, a remarkable portion of every rectrix, including the rachis, bearing chestnut reddish colouration. Besides, the dark throat of "*T. grzimeki*" is less well defined than that of other species of this genus and its under tail-coverts are not iridescent, whereas *Threnetes* is generally characterized by its brilliant green under tail-coverts. Thus, although Ruschi (1973b) recognized the resemblance of "*T. grzimeki*" to *Glaucis* ("que essa n.sp. mais se assemelha a uma espécie de Genero *Glaucis*"), he preferred its

placement in *Threnetes* due to the dark throat as well as to the absence of serration in the maxilla.

Careful examination of these characters reveals at once a remarkable similarity between "*T. grzimeki*" and young *Glaucis hirsuta*. Immature individuals of *G. hirsuta* are characterized by a dark throat that contrasts with the lighter breast, thus resembling *Threnetes*, and by the absence of serration in the maxilla. Adult *Glaucis hirsuta* do not exhibit a contrasting colouration of the throat, whereas their maxillas develop a serrated ventral surface. The colours of the tail and the under tail-coverts, the other distinguishing characters of "*T. grzimeki*", are identical with those of *Glaucis hirsuta*. Strong support that "*T. grzimeki*" is merely the immature plumage of *Glaucis hirsuta* is, in fact, given by Ruschi (1973b) himself. White tips to the rectrices, 5 mm long, clearly indicate an immature bird, whereas adult *Glaucis hirsuta* and *Threnetes* spp. have distinctly shorter white tips. Furthermore, the curved bill of "*T. grzimeki*" portrayed by Ruschi (1973b; the scale given in the lower part of the drawing, indicating a bill length of 5 mm, is erroneous) differs strikingly from that of *Threnetes* spp. but is similar to that of *Glaucis hirsuta*. Light tips to the primaries, secondaries and wing-coverts would clearly indicate a young bird, but Ruschi (1973b) did not mention these tips nor are they visible in the colour plate (Ruschi 1982) or colour photograph (Ruschi 1986). L. A. P. Gonzaga, however, informs me that the type specimens of "*T. grzimeki*" do not fit their description well in that they show a "scaled appearance of the upperparts".

Since its first description, additional observations of "*Threnetes grzimeki*" have been recorded from Mucurí (Ruschi 1982) and the Sooretama Biological Reserve (King 1981), both in the state of Espirito Santo. More recent investigations in the latter reserve, however, confirmed the presence of *Glaucis hirsuta* but gave no indications of "*T. grzimeki*" (Scott & Brooke 1985). The nest of "*T. grzimeki*" is said to be "identical to that of the species of the genera *Glaucis* and *Rhamphodon*, which live in the same forest" (Ruschi 1982). Whereas *Glaucis hirsuta* is a common species in SE Brazil, the geographically nearest species of *Threnetes*, *T. leucurus*, inhabits riverine forest in the Amazon Basin, c. 2300 km distant across habitat unsuitable for *T. leucurus*, though *G. hirsuta* has a wider tolerance.

Grantsau (*in* Mayr & Vuilleumier 1983 and *in* Vuilleumier & Mayr 1987) regarded "*T. grzimeki*" as a young *Glaucis hirsuta* but provided no support for this suggestion. Vielliard (in litt.) also doubted the validity of "*T. grzimeki*" and has presented spectrograms exhibiting different types of song in *Glaucis hirsuta* and a nearly indistinguishable song of "*T. grzimeki*" (Vielliard *in* Ruschi 1986).

In summary, I agree with Grantsau (in Vuilleumier & Mayr 1987) and Gonzaga *et al.* (MS) in regarding "*Threnetes grzimeki*" as the immature plumage of *Glaucis hirsuta*.

Threnetes loehkeni, LOEHKEN'S BARBTHROAT

Grantsau (1969) described *Threnetes loehkeni* from 5 males and 1 female from Serra do Navio, Amapá, Brazil, as being clearly distinguishable from *Threnetes leucurus*, a widely distributed species in the Amazonian lowlands. *T. leucurus* is recorded both from Surinam (*T. l. leucurus*) and

eastern Pará, Brazil (*T. l. medianus*; a single specimen from this subspecies, identical to specimens from the vicinity of Belém, Pará, was recorded from Cajari River, Amapá, at c. 200 km south of Serra do Navio—Ruschi 1957). Thus, *T. leucurus* 'surrounds' the probable range of *T. loehkeni*.

The characters given by Grantsau (1969) to distinguish Loehken's Barbthroat from *T. leucurus*, the nearest ally within the genus, are few. Colouration patterns in general are quite similar though less distinct in "*T. loehkeni*". The most diagnostic feature given is the tail colour: *T. leucurus* has the major parts of the rectrices white to pastel-coloured, whereas these are nearly totally dark in "*T. loehkeni*". Grantsau (1969) added a colour plate to illustrate these differences and a colour photograph is published by Ruschi (1986).

In New York I had the opportunity to compare 3 specimens of "*T. loehkeni*" (AMNH Nos. 825213–15) with all subspecies of *T. leucurus*. The 3 specimens, collected by Grantsau in Serra do Navio in 1969, have nearly completely dark rectrices with pastel-coloured tips; 2 males (AMNH Nos. 825213–14) exhibit light grey coloured parts near the feather's base as well, a character not mentioned by Grantsau (1969) and of interest because even young *T. leucurus* show some white or pastel-coloured tinge in the same area, the amount of this colouration increasing with age. However, the colouration of the tail is the most variable character in *T. leucurus*. In general, the colouration of the 3 specimens of "*T. loehkeni*" does not go beyond the variation found in all subspecies of *T. leucurus*, variation which is probably due to age and sex.

According to Grantsau (*in* Vuilleumier & Mayr 1987), "the adult male *loehkeni* is the only *Threnetes* without a black breast". This is not, however, completely true: one adult male (AMNH No. 825213) has the same dark green iridescent colour as other adult male *Threnetes*, yet this colouration does not appear as a single patch but broken up by lighter feather bases. In male *T. leucurus* the amount of the dark green breast colour seems to increase with age. If so, compared to fully adult male *T. leucurus*, either the males of "*T. loehkeni*" presently known are younger, or development to the final breast colour of male *T. leucurus* does not occur in *loehkeni*.

Novaes (1974) and L. A. P. Gonzaga, who examined paratypes in the MNRJ, regard "*T. loehkeni*" as a subspecies of *T. leucurus*, as also does Pinto (1978). Recently, Grantsau (in Vuilleumier & Mayr 1987), contradicting his assessment of the breast colour in adult male *loehkeni*, regarded *Threnetes niger freirei* as the adult of "*T. loehkeni*". *T. niger freirei* was described by Ruschi (1976) from Serra do Navio, Amapá, as well. It has a completely dark green iridescent plumage, according to photographs (Ruschi 1976, 1986). However, until more recently collected *Threnetes* specimens are available from Amapá, Brazil, and from French Guiana, the taxonomic affinities between *T. niger* and *T. leucurus* remain obscure, and the best treatment of *loehkeni* for the present is as a distinctive subspecies of *T. leucurus*.

Threnetes cristinae, BRONZE BARBTHROAT

Based on a single adult male, Ruschi (1975) described *Threnetes cristinae* from Serra do Navio, Amapá, Brazil, which is also the type locality of

"T. loehkeni" (Grantsau 1969). Ruschi (1975) compared both 'species' and stated that *"T. cristinae"* is much darker overall, and that there are some slight differences in the facial patterns. Furthermore, *"T. cristinae"* is said to have cinnamomeous rather than light ochraceous underparts. The unique type specimen of *"T. cristinae"* is portrayed in a colour photograph by Ruschi (1986).

Considering the intraspecific variability within *T. leucurus,* the slight differences in the measurements of *"T. cristinae"*, emphasised by Ruschi (1975), are virtually meaningless. Such variation is probably due to age, sex, and individual variation. The differences in colour between *"T. loehkeni"* and *"T. cristinae"* are probably also due to such variation. Differences in the body masses (*"T. loehkeni"*, ♂: 5 g, Grantsau 1969; *"T. cristinae"*, ♂: 7 g, Ruschi 1975) are probably measurement artifacts. That *"T. cristinae"* shares the same habitat with *"T. loehkeni"* (Ruschi 1975) confirms, in my opinion, that *"T. cristinae"* is a synonym of *"T. loehkeni"*, because the sympatric existence of such closely related forms as full species appears unlikely.

Mayr & Vuilleumier (1983) stated that "it seems likely that *T. cristinae* is a synonym of *Threnetes (?leucurus) loehkeni* . . . but further material is obviously needed before a final decision can be made". Grantsau (*in* Vuilleumier & Mayr 1987) "believes that *T. cristinae* is the immature of *T. loehkeni*" regardless of the fact that the description of *"T. cristinae"* is based on an adult male. Even so, the comparison of a subadult individual (e.g., AMNH No. 825215, *"T. loehkeni"*) with the characters given by Ruschi (1975) indicates that *"T. cristinae"* could not be an immature *loehkeni.* Immature *Threnetes* spp. are recognized by light tips to the primaries and secondaries, which are not mentioned by Ruschi (1975). Besides, the type of *"T. cristinae"* is said to have a light rosy band between the dark throat and the breast, the latter having the same colour as the upperparts (Ruschi 1975). In contrast, immature *"T. loehkeni"* have an ochraceous colouration, that could not be described as a band, between the browner throat (lighter than in adults) and the breast, which is

TABLE 2
Taxonomic recommendations for 7 recently described new species of hummingbirds

The taxon described as:	should be regarded as:
Phaethornis maranhaoensis Grantsau, 1968	*Phaethornis nattereri* Berlepsch, 1887
Threnetes loehkeni Grantsau, 1969	*Threnetes leucurus loehkeni* (Grantsau, 1969)
Phaethornis margarettae Ruschi, 1972	*Phaethornis malaris margarettae* (Ruschi, 1972)
Phaethornis nigrirostris Ruschi, 1973	*Phaethornis eurynome eurynome* (Lesson, 1832)
Therenetes grzimeki Ruschi, 1973	*Glaucis hirsuta hirsuta* (Gmelin, 1788)
Threnetes cristinae Ruschi, 1975	*Threnetes leucurus loehkeni* (Grantsau, 1969)
Phaethornis koepckeae Weske & Terborgh, 1977	*Phaethornis koepckeae* Weske & Terborgh, 1977

ochraceous and flecked with iridescent feather tips. In general, the colour contrast on the underparts is less distinct in immature than in adult individuals.

L. A. P. Gonzaga, who had access to the type specimen, informed me that "*T. cristinae* seems [to be] identical to *T. loehkeni*, which, in turn, must be a subspecies of *T. leucurus* . . .". Thus, there remains little doubt that "*T. cristinae*" is merely a synonym of *Threnetes leucurus loehkeni*.

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Relationships in the *Campethera notata*, *C. abingoni* and *C. (a.) mombassica* complex of the Afrotropics

by P. A. Clancey

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The African savanna woodland woodpeckers of the *Campethera notata* (Lichtenstein) group are widely distributed to the north, east and south of the Upper and Lower Guinea Forests, but are on the whole sparse and local in the north of their range. This is seen as due to a measure of competition with the sympatric Nubian Woodpecker *C. nubica* (Boddaert), and forms of the *C. notata* group are only numerous and widespread to the south of *C. nubica*'s range (see Snow 1978: maps 377, 378). The Knysna Woodpecker *Campethera notata* (Lichtenstein), 1823:

Galgenbosch, near Thornhill, eastern Cape, of the southern and eastern Cape, Transkei and southwestern Natal is now generally treated as a species discrete from the Golden-tailed Woodpecker *Campethera abingoni* (A. Smith), 1836: Zeerust, western Transvaal, which replaces it immediately to the northeast of its stated range. Uncertainty on this score persists in the literature (see Short & Tarboton 1978), but their true relationship is, however, briefly defined by Clancey (1986).

Specimens of *C. notata* were first taken in Natal in the valleys of the Ifafa and Illovo Rivers by the Woodward brothers last century (R. B. & J. D. S. Woodward 1899), but confirmation of their records is only of recent date with the finding of the species in the wooded valley of the Umtamvuna R. and the Oribi Gorge Nature Reserve on the southern Natal coast in the 1980s (see Clancey 1987). Its present limits in Natal are uncertain, as eradication of much of the virgin littoral flora since the turn of the century has, unfortunately, rendered the Woodwards' collecting localities no longer relevant. At their point of contact, *C. abingoni* (in the race *C. a. constricta* Clancey, 1965; Kloof, Natal) reaches the terminal point of its range and hugs the coastal strip, with *C. notata* present immediately inland of it in wooded valleys at low altitudes. The 2 species meet in a condition of closely interdigitated parapatry, but it is currently uncertain if limited hybridization takes place.

C. abingoni and *C. notata* require to be seen as comprising 2 polytypic allospecies with what appear to be differing evolutionary backgrounds, with *C. notata* the primitive member of the pair and derived from a forestal ancestor. This is indicated by likenesses in *C. notata* reminiscent of equatorial forest *Campethera* species, eg. its olive ground with reduced red tipping to the pileum in males, largely unvariegated dorsal and wing surfaces, and, in females, the virtual absence of light spotting over the forehead. Also, the tail is longer and the rectrices less rigid in *C. notata* than in *C. abingoni*. It is significant that *C. notata* is divisible into 2 races along ecological lines, with the nominate subspecies being largely dependent on stands of xerophilous and largely interior woodland, whereas the more saturated *C. n. relicta,* Clancey 1958; Embotyi, Transkei, is confined to coastal forest at Knysna and along the Transkeian coast to southwestern Natal (see Clancey 1958). Recognizing that *notata* and *abingoni* are related but not of immediate common origin, with *abingoni* wide-ranging in savanna woodland—the outcome of a not too distant south-central Afrotropical evolutionary radiation—brings one to speculate on a possible provenance of the ancestor of modern *C. notata* with its essentially terminal and relict status.

In this connection a prime consideration is that in East Africa a currently recognized race of *C. abingoni,* namely, *C. a. mombassica* (Fischer & Reichenow), 1884: Mombasa, Kenya, is not only largely coastal in distribution but also differs abruptly from the contiguous inland subspecies *C. a. suahelica* Reichenow 1902: Arusha, northern Tanzania, in sharing several of the criteria of *C. notata* subspp., thus suggesting the possibility that the origins of *notata* lie in the eastern African equatorial belt. *C. a. mombassica* exhibits characters analogous to those of *C. notata* (when laid alongside other subspecies of *C. abingoni*), in its reduced red tipping to the more olivaceous feathers of the pileum in males and the virtual loss of

light spotting to the forehead in females, plainer dorsal and wing surfaces, and a darker tail with brownish rather than bright chrome yellow rachises—characters, as already pointed out, reminiscent of equatorial forest species of *Campethera*. Ventrally, however, *mombassica* is like other *abingoni* subspp. with the breast and sides streaked with olive-brown and not spotted; but noteworthily the forethroat centre is largely plain. The 2 forms (*C. notata* and *C. a. mombassica*) thus share features indicating a like evolutionary chronology, deriving from an ancestor which arose during a major pluvial period when the Afrotropical equatorial forests and their outliers had reached a climactic stage. The question of conspecificity nevertheless does not arise, because the 2 are unquestionably separable at the species level on the basis of the characters enumerated hereunder.

Campethera abingoni mombassica compared with *C. notata relicta*

In *mombassica:* (a) Pileum much paler and more olivaceous, with even more reduced and duller terminal red to the feathers.

(b) Dorsum and wings dull citrine, less saturated greenish, but with comparable light variegation.

(c) Venter streaked (as in nominate *abingoni*) and not entirely marked with large overlapping dark olive-brown spots.

(d) Culmen from skull (mm) similar in both sexes: 23–26 (24.8). In *C. n. relicta,* male has longer bill than female: ♂♂ 26–28 (27.1), in ♀♀ 24–25.5 (24.7).

(e) Tail (mm) much shorter: 59–61 (60.2), *versus* 68.5–72 (70.25).

Campethera abingoni mombassica
compared with *C. a. suahelica* and *C. a. vibrator* Clancey 1953

In *mombassica:* (a) Pileum buffy olivaceous, not grey, and the red tipping vestigial in ♂♂. Female with forehead pale buffish, virtually unspotted, not dark grey dotted boldly with white.

(b) Dorsum and wings dull citrine with faint yellowish spotting, not bright golden olivaceous variegated with yellowish white spots and broken bars; tertials virtually unmarked.

(c) Ventral streaking browner and somewhat diffuse; forethroat virtually plain yellowish white.

(d) Bill markedly shorter. Culmen-length (mm) in *suahelica* 27.5–29 (28.4).

(e) Wing (mm) much shorter: 101.5–108 (105.0), *versus* 110–122 (115.75) in 34 ♂♀ of *C. a. vibrator*. Tail (mm) shorter: 59–61 (60.2), against 62–67 (64.0).

The limited relevant data currently available supports the view that *C. a. suahelica* and *mombassica* are almost certainly discrete species, but with hybrids having been collected at Moshi in northern Tanzania and near Dar es Salaam on the coast. This presupposes that the forms may be incompletely genetically isolated at certain points along the range interface. Interestingly, Short & Tarboton (1978) record one specimen of *mombassica* and 3 of *suahelica* as having been obtained on

Mt Kilimanjaro, all on 22 June 1967, without any hint of intergradation. However only an extended field study can adequately resolve the true status of *mombassica*.

As noted earlier, *C. a. suahelica* results from a south-central picid radiation, which in the north and northeast achieved limited expansionary success, being largely pre-empted in the exploitation of the savanna woodland niche by entrenched elements of *C. nubica*. Another cogent point is that the distributional pattern presented by the spatially remote *C. notata* subspp. and *C. (a.) mombassica* is adumbrated in some respects by a like situation among eastern subspecies of the Little Spotted Woodpecker *Campethera cailliautii* (Malherbe), 1849: Mombasa, Kenya (see discussion in Clancey 1980). The same is the case in the 3 eastern populations of the Bearded Woodpecker *Thripias namaquus* (Lichtenstein), 1793, namely *T. n. schoensis* (Rüppell), 1842: Shoa, Ethiopia, *T. n. decipiens* (Sharpe), 1884: Shimba Hills, southeastern Kenya, and *T. n. coalescens* Clancey, 1958: Kei Bridge, eastern Cape/Transkei (see Clancey 1958a), in which the Ethiopian race is shown to resemble closely that of southern Mozambique southwest to the forested coast of the Transkei.

As *C. notata* subspp. and the East African *C. (a.) mombassica* are closely allied and in an evolutionary context are more primitive than *C. abingoni* subspp., being remnants (relicts) of a distant pluvial period and forest-based radiation, it is inadvisable to treat *mombassica* as a subspecies of *abingoni*, even in the absence of conclusive proof to the contrary. While *C. a. suahelica* and *mombassica* may hybridize, their immediate ancestral origins are clearly not the same. *C. mombassica* ranges from southern Somalia to southeastern Kenya, and northeastern and eastern Tanzania, south on the littoral as far as Dar es Salaam.

In the light of these considerations, the *C. notata* group of Afrotropical woodpeckers is seen as comprising 3 allospecies: *C. notata, C. abingoni* and *C. mombassica*.

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The taxonomy of Sclater's Lark *Spizocorys sclateri*

by W. R. J. Dean & P. R. Colston

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Three subspecies of Sclater's Lark *Spizocorys sclateri* (Shelley) have been recognized and named: nominate *S. s. sclateri*, *S. s. capensis* (Ogilvie-Grant) and *S. s. theresae* (Meinertzhagen). In the course of preparing text for *Birds of Africa* Vol. 4 (Urban *et al.* in prep.), WRJD examined specimens of *S. sclateri* collected over its total range in South Africa and Namibia.

Spizocorys sclateri is an endemic species, entirely confined to the Nama Karoo (biome data from Rutherford & Westfall 1986; distributional data from Dean & Hockey, in prep.) within the Southwest Arid Zone of Africa. The preferred habitat is mainly sparsely vegetated gravel or stony plains, but *S. sclateri* also occurs in poorly drained dwarf shrublands on clay soils, where it is restricted to sparsely vegetated stony patches. The species is nomadic within this area, moving in response to localized rainfall events and disappearing completely from areas in which it may have nested less than 2 years previously. Its occurrence in any area varies annually—it may be abundant in one year, present in fewer numbers in another year and entirely absent in a third year (Winterbottom 1961, 1967). The flock size is generally 5–25 birds.

The breeding biology of *S. sclateri* is poorly known; details of only one nest have been published (Hockey & Sinclair 1981). Clancey (1985) gives a second nest record without quoting the source of the data. In August 1987, 6 nests with eggs were found in the Pofadder–Kenhardt area, following rain (J. C. Sinclair).

There is little likelihood of genetic isolation in a nomadic and gregarious species, though it is not unknown, for example, in the Grey-backed Finchlark *Eremopterix verticalis*.

Doubt has been cast on the validity of the races of this species. Meinertzhagen (1951) considered *capensis* to be a synonym of *sclateri*. Winterbottom (1972) examined specimens of *sclateri*, topotypical *capensis* (including the type), and other specimens of *capensis* from various localities in the Karoo, and specimens of *theresae* from 80 km SW of the type locality of this race; he was unable to find consistent differences between *sclateri* and *capensis*, but nevertheless considered that *theresae* was a good race. Meinertzhagen himself (pers. comm. *in* Winterbottom 1972) by then regarded *theresae* as doubtfully distinct from *sclateri*. Clancey (1976), following Winterbottom's (1972) revision, accepted *theresae* as a valid race and *capensis* as a synonym of nominate *sclateri*, but subsequently, after examining specimens, Clancey (1980, 1985) regarded *theresae* also as a synonym of *sclateri*. Therefore, if there is no difference between *sclateri* and *capensis* (as in Meinertzhagen 1951, Winterbottom 1972, Clancey 1976) and no difference between *sclateri* and *theresae*

(White 1961, Clancey 1980) then there can be no difference between *capensis* and *theresae*.

This conclusion is supported by our own findings. WRJD was unable to find consistent differences between any of the so-called races of this lark or between the "pale and greyness" of *theresae* and the "darker buff" of *capensis* within the normal range of plumage coloration in *S. sclateri*. Clancey (1985) notes that "variation in this small lark [*S. sclateri*] is slight". Examination of the types of *sclateri, capensis* and *theresae* in the collections of the British Museum (Natural History), Tring, by PRC, revealed that *sclateri* and *capensis* were both adults with worn plumage, and were virtually identical in plumage coloration and markings to each other. Further, the type of *theresae* collected by R. Meinertzhagen 25 miles east of Pofadder, Northern Cape, together with an immature male on 6 May 1949, were also found to be virtually identical in plumage coloration to 3 specimens of nominate *sclateri* collected by Mrs B. P. Hall near Seeheim, SWA-Namibia (BM Nos. 1950.50.1129–1131) in January 1950, and a further specimen of *sclateri* collected by Meinertzhagen 50 miles SE of Upington, Northern Cape Province in June 1949 (BM No. 1965–M.7338).

It may be that the population of *S. sclateri* in dwarf shrublands on clays in the more mesic eastern parts of its range is in fact isolated from the population in arid grassy plains on sands and gravels in the western and northwestern parts of the range. However, until field work on the biology of the species has shown that there are 2 or more genetically isolated populations in this nomadic species, no purpose is served by creating doubtfully distinct subspecies. The nomenclature of this species should revert to binomial *Spizocorys sclateri* (Shelley).

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On the possible former breeding of the Red-footed Falcon *Falco vespertinus* in northwest Africa

by Michael Walters

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In the egg collection of the British Museum (Natural History) there are 2 sets of eggs said to be of *Falco vespertinus* collected in Algeria in the middle of the nineteenth century. The species occurs in northwest Africa mainly on spring migration, but has not been known to breed there in recent years. There is no reference to present or former breeding in Algeria by Peters (1931), Witherby *et al.* (1940), Voous (1960), Vaurie (1965), Etchecopar & Hue (1967), Mayr & Cottrell (1979) or Cramp & Simmons (1980). The only person to have recorded it appears to be Loche (1867) who is quoted here in full, his book not being readily accessible:

"Assez répandu en Algérie, cet Oiseau s'y rencontre par petites troupes de cinq à six individus, il recherche de préférence les endroits marécageux, le voisinage des lacs et des étangs et le littoral de la mer; sa nourriture principale consiste en Insectes coléoptères, et an Sauterelles fort communes en Algérie et qu'il est trés-habile à saisir.

L'Erythrope Kobez se reproduit en Algerie dans les joncs et les broussailles qui avoisinent les lacs; sa ponte est de quatre oeufs assez gros, un peu courts, . . ."

This implies that the bird nests on the ground, which is not usual but is known to occur (Dementiev & Gladkov 1951). Heim de Balsac & Mayaud (1962) draw attention to Loche's account, admit that his description of the eggs appears to be correct, but nevertheless dismiss the record as unlikely, without giving a reason for their decision.

The eggs were received from the Tristram Collection and represent 2 of 3 clutches formerly owned by him. The present whereabouts of the other clutch is not known. The details of these 3 clutches as given on p. 37 of Tristram's MS. Catalogue (now in the British Museum (Natural History) at Tring), are as follows:—

W.a. From a nest of three [eggs] in the forest south of Lac Halloula. 4 July 1857.

W.k. From a nest of four in the neighbourhood of Air Oosera. Lac [illegible] in June 1856.

37.43 Near Air Oosera, 1860. Taken by Capt. Loche.

The sets in the Museum are the second and third listed above. No. W.k., consists of 2 eggs which have been registered BM(NH) Nos. 1901.2.25.79 and 1901.2.25.560. These are stated in the Museum's records to have been taken by Captain Loche, but Tristram implies that he took them himself. They measure 39.1 × 31.5 and 38.9 × 30.2 mm. The second set, No. 37.43, consists of 3 eggs, registered 1901.2.25.557–9, which measure 40.15 × 30.8; 37.2 × 31.2; and 35.6 × 31.7 mm. All these measurements fall within the range given by Schönwetter (1961) for *Falco vespertinus*, but also within the range for *F. tinnunculus* and several other small species

of *Falco,* the eggs of which are very variable and not distinguishable with certainty. Little can be deduced as to the Tristram eggs' identity based on their appearance, save that there is no reason to suppose that they are incorrectly identified.

There are 4 skins of *F. vespertinus* in the BM(NH) collection from northwest Africa. These are as follows:—

1872.11.4.54 adult ♂. Tangier, June 1871. Collected by Howard Saunders.

1897.11.10.266 adult ♂. Tangier, June 1871. Collected by Howard Saunders.

1847.10.21.32 immature ♂. Tunis, no date. Collector not known, received from Louis Fraser.

1936.6.N.20.1531 immature, stated to be ♂. Algeria, no date. Verreaux Collection. Appears to be a juvenile.

F. vespertinus has an unusual migration pattern, occurring in northwest Africa only on spring migration. The autumn passage from the normal breeding range in eastern Europe and western Asia is south over the eastern Mediterranean and the Black and Caspian Seas (Cramp & Simmons 1980). The spring migration begins in early March; a minority regularly pass through west Africa, in April, and cross the Mediterranean from mid-April to mid-May. Eggs are normally laid in late May and early June (Witherby *et al.* 1940), mid-April to end of May (Cramp & Simmons 1980), so that the egg dates for the Algerian specimens are certainly late. The 2 skins collected by Saunders in June, long after the migration should have passed through, may suggest breeding birds.

It seems possible, therefore, that *Falco vespertinus* bred formerly in Algeria, though the present evidence is inconclusive.

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A new subspecies of *Carpodacus roseus*

by M. Ralph Browning

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Pallas' Rose Finch *Carpodacus roseus* (Pallas), 1776, (type locality–Uda Selenga rivers, Transbaicalia) breeds in central and eastern Siberia and on Sakhalin Island, and in winter is found south to northern China, Korea, Hokkaido, and northern and central Hondo, Japan (Beme 1954, Vaurie 1965, Paynter 1968).

The population from Sakhalin Island was distinguished by Portenko (1960) who described the race *sachalinensis* as darker, and with a shorter wing than the nominate race. Unfortunately, the coloration of the holotype of *sachalinensis* is not within the range of individual variation of the Sakhalin population and the bird is presumably a migrant individual of the pale nominate race. Portenko's proposed name therefore becomes a synonym of *roseus* (Browning 1976).

Nechaev (1977) considered that the "crimson-pink" coloration of the holotype of *C. r. sachalinensis,* which is a moulting individual, would become darker in the definitive plumage. This is highly unlikely, as even subadult males are divisible into a dark and a pale population. Furthermore, the outer margins of the inner primaries and most of the secondaries of the holotype of *sachalinensis* are browner than specimens of the dark population (Browning 1976).

The basis for *C. roseus* breeding on Sakhalin Island was from nests and eggs (Portenko 1960, 1962) that proved to be those of the Long-tailed Rose Finch *Uragus sibiricus* (Vorobiev 1973). In 1976, Dr V. A. Nechaev of the Academy of Sciences, USSR (*in litt.*, 1 December 1976) discovered *C. roseus* breeding on northeastern Sakhalin Island. Nechaev (1977) documented the breeding biology (nesting, eggs, nestlings, behaviour, moult etc.) and collected "several" breeding males. He identified the specimens as *sachalinensis*, and convincingly described them as members of the darker population (Nechaev 1977, 1978, *in litt.*).

Because no breeding specimens from Sakhalin Island were then available, I did not earlier propose a new name for the dark population (Browning 1976). Although the specimens collected as breeding individuals by Nechaev could not be made available to me for comparison, now that it has been confidently and acceptably confirmed that the dark form does indeed breed on Sakhalin Island, it is appropriate to provide the population with a name:

Carpodacus roseus portenkoi subsp. nov.

Holotype. US National Museum No. 424295, adult male, collected at Chitose, Hokkaido District, Japan on 14 April 1950, by Hyojiro Orii; original no. 3325.

Diagnosis. Adult males similar to *C. r. roseus,* but separable by the noticeably darker, Burnt Carmine, underparts, rump and crown, which

in the nominate race are Geranium Pink to Lake Red (colours with capitals from Ridgway 1912). Thus, *portenkoi* is decidedly more purple and less red than nominate *roseus*. The outer margins of the inner primaries and most of the secondaries in *portenkoi* range from white to Madder Brown; in the nominate race these margins are Ferruginous. The feathers of the back have black centres and grey edges, while those of the nominate race have grey centres and brown edges. In dorsal view, *portenkoi* appears more grey and less brown than nominate *roseus*. The females and subadult males of *portenkoi* are also more purple below and darker and greyer above than the nominate race. Males of *portenkoi* and nominate *roseus* are similar in size (see measurements in Browning 1976). Females of *portenkoi* have a greater mean bill width ($t = 2.1368$, $P < 0.02$) and a deeper bill ($t = 2.2105$, $P < 0.02$) than females of nominate roseus.

Distribution. Breeds on northeastern Sakhalin Island near the village of Val (Nechaev 1977). Nomadic, occurring on Sakhalin Island, southern Korea and on Hokkaido, Japan, during non-breeding months.

Specimens examined. Paratypes of *portenkoi* include all specimens examined, as listed below.

Sakhalin Island: vicinity of Aniva Bay, ZIAS 62904, 62905, subadult males, and ZIAS 62906, 62911, females collected on 21, 19, 28 and 17 March 1948, respectively; Korsekov area, Solobeke Village, ZIAS 62885, 62886, 62892, 62893, 62894, 62895, 62899 and 62903, all females, collected on 18, 21, 17, 22, 13, 17, 19 and 20 March 1948, respectively.

Korea: Kyonggi-do, Seoul, MVZ 134956, 134958, 134959 and 134965, subadult males, collected on 11, 22, 22 and 15 December 1956, respectively, and USNM 518500, subadult male, 2 March 1963; Kyonggi-do, 3 miles NE seoul, MVZ 136604, immature male, 26 January 1958; Kyonggi-do, 10 miles NW Seoul, MVZ 149510, subadult male, 3 February 1963; Kyonggi-do Kwingnung, 15 miles NNE Seoul, MVZ 135234 and 135235, adult males, both collected on 17 March 1957; Kyonggi-do, Nam-San, Seoul, MVZ 134963, adult male, 22 December 1956; Kyonggi-do, Kwangnung, USNM 526808, 526811, 525812, 526813 and 526815, adult males, 18 January 1965, 17, 23, 24 February 1966 and 15 January 1966, respectively; Kwangwon-do, Mt Sorak, USNM 518499, adult male, 1 July 1958.

Hokkaido, Japan: Chitose, USNM 424296, subadult male, collected on 14 April 1950; Iburi Province MVZ 124260 and 124621, females, 14 January 1950 and 21 April 1921, respectively; Tomakomai, USNM 424292 and 424293, adult males, 5 February and 14 January 1950, respectively.

Etymology: Named in honour of L. A. Portenko.

Remarks: Nechaev (1977) was on northern Sakhalin Island from 22 May to 2 September 1976. He reported that nest building began in May, and found nests with eggs on 3, 4, 7, 21 and 24 June, and what he called a second nesting on 10 July. Portenko (1960, 1966) included nearby mainland localities in the breeding range of the dark form. Nechaev (1977) agreed, but he did not examine the specimens that Portenko identified from the nearby mainland, and these are clearly representatives of the paler nominate subspecies (Browning 1976).

Acknowledgements

For the loan of comparative specimens, I reiterate my gratitude to the authorities of the museums acknowledged in Browning (1976). These include museums having paratypes of *portenkoi* listed herein: Museum of Vertebrate Zoology, Berkeley, California (MVZ), the Zoological Institute of the Academy of Sciences, Leningrad USSR (ZIAS) and the National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM). I especially thank V. A. Nechaev for his comments (*in litt.*) on the Sakhalin populations. Andrew Elzanowski kindly provided a translation of Nechaev's 2 papers and L. N. Kassianoff translated several other papers during the course of this and my earlier paper. I thank R. C. Banks, R. B. Clapp and S. L. Olson for reading the manuscript, and express appreciation for their helpful suggestions.

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Black-hooded Antwren *Formicivora* [*Myrmotherula*] *erythronotos* re-discovered in Brazil

by Fernando Pacheco

Received 27 February 1988

The Black-hooded Antwren *Formicivora* [*Myrmotherula*] *erythronotos* was described by Gustav Hartlaub (1852) from a skin in the Hamburg Museum, probably received from the Hamburg-born citizen C. H. Beske, who lived in Nova Friburgo, Rio de Janeiro (22°16'S, 42°31'W) (Fig. 1), in the mountains of which the species has been thought to be confined. Burmeister (1856) found *F. erythronotos* in Nova Friburgo in the forest undergrowth, and observed that it lived in small groups. He also described one male and one female/immature male of the species. All the skins he collected were deposited at the Halle University Museum, in Germany. Burmeister travelled from the city of Rio de Janeiro to Lagoa

FIGURE 1

Figure 1. Map of Rio de Janeiro district to show Angra dos Reis, in the southwest, site of rediscovery of *Formicivora* [*Myrmotherula*] *erythronotos*.

Santa, in the State of Minas Gerais, staying in Nova Friburgo, from 24 December 1850 to 8 April 1851, where he was in contact with Beske.

In his 'Synopsis of the American Antbirds (Formicariidae)', Sclater (1858) redescribed the male, described the previously unknown female and mentioned additional skins at the British Museum (Natural History) (BMNH) and in his own collection, shipped from "Provincia do Rio de Janeiro". He also created the genus *Myrmotherula*, placing *Formicivora erythronotos* Hartlaub 1852 in this new genus. Sclater (1890) further confirmed the existence of 4 skins in the BMNH as from Rio de Janeiro but without defining the exact locality of origin. No other skins have been reported since. A total of about 20 specimens of the Black-Hooded Antwren is currently available in European and American Museums.

With so little information about this species, it is not surprising that Goeldi (1894), who published the first monograph about Brazilian birds, in Portuguese, and H. von Ihering (1900), in his synopsis about the Nova Friburgo birds, both omitted *F. erythronotos*. However, Nova Friburgo was given by Peters (1951)—based on Burmeister's account—as "the only definite locality" where the species is known.

Beske placed his ample collection at Burmeister's disposal (Burmeister 1853), but we surmise that many of Beske's skins came from collaborators and not necessarily from around Nova Friburgo. In fact, half of the 160 species recorded by Burmeister at Nova Friburgo (800–1000 m) are much more common at lower altitudes, and some are typical of these low altitudes. Examples of the latter are: *Busarellus nigricollis*, *Pyrrhura leucotis*, *Polytmus guainumbi*, *Monasa morphoeus*, *Pipra pipra* and *Tangara mexicana*. Other controversial records of Burmeister's are, for example, *Iodopleura pipra* in Lagoa Santa, Minas Gerais (Snow 1982) and *Herpsilochmus pileatus* in Nova Friburgo.

The possibility cannot be discounted that Burmeister's account of *F. erythronotos* in Nova Friburgo is not reliable either, and that the species has never been actually collected there. The collection that Burmeister took to Europe almost certainly included specimens furnished by Beske, which therefore could include material collected at low altitudes, including perhaps *F. erythronotos*.

Ruschi (1953) lists an occurrence of *F. erythronotos* in the State of Espirito Santo, but this record, although it has been adopted by some authors (Meyer de Schauensee 1966, Pinto 1978), has not been confirmed. The species was placed on the endangered birds list by Vincent (1966) and was supposed extinct by King (1978–1979) and by Scott & Brooke (1985).

On 24 September 1987, following the indications of Fernando and Cacilda Carvalho, Fernando Carvalho and I visited a site at sea level near Angra dos Reis, Rio de Janeiro (23°00′S, 44°18′W), and observed a pair of *F. erythronotos* foraging in a swampy patch of secondary forest, near the mangrove line. The area is in a rather flat narrow strip of land, situated in the foothills of the Serra do Mar, which here closely approached the ocean. We tape-recorded the birds' calls and 2 days later, returned to the same site and mist-netted the pair. After being photographed, they were released.

The present rediscovery partly resulted from the construction in the 1970s of a highway across the swampy region, where the species must have remained overlooked for such a long time. Later we also verified its presence in a dry secondary forest, close to the site of the rediscovery and also at sea level. In the first observations the birds were foraging in the foliage mainly up to 1 m from the ground, reaching sometimes up to 2 m. We noticed the presence of other individuals very close to the pair we were observing. This proximity of other individuals in a restricted area may explain the mild response which we obtained from play-back of the birds' vocalizations. Other bird species observed at this site were *Manacus manacus, Automolus leucophthalmus, Myrmotherula minor, M. unicolor* and *Amaurolimnas concolor*.

The song of the male consisted of a rapidly repeated single note, which we could transcribe as: *"tcho/tcho/tcho . . ."*, up to 40 or more notes in 4–8 seconds, with very slight variation in pitch and volume. The female emitted a song very similar to that of the male, but a little higher and with less volume. The female call consisted of a double emphatic note like *"tcherp-tcherp"*, the second note higher than the first.

To our surprise, the birds' repertoire unmistakably follows the pattern found in the *Formicivora* group, especially *F. serrana,* in both songs and calls. This relationship is supported by the bird's biometric proportions, especially the long tail, and the birds' general behaviour and appearance. The chief difference from the other known *Formicivora* is in its size, *erythronotos* being the smallest of any others in the group. For these reasons we are inclined to return *erythronotos* to *Formicivora*.

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and Luiz C. Marigo who kindly provided help in the field; Helmut Sick for his guidance and encouragement over the years; Nigel Collar who gave me the incentive to write this paper; John Roe for help with the English version of the text; Zelia Wolker and Leandro Gomes for assistance with the computer; and, of course, Cacilda and Fernando Carvalho for their well-informed hunch.

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Batis minima (Verreaux) new for Cameroon

by C. Erard & P. R. Colston

Received 7 March 1988

In the course of studies conducted by C.E. on the systematics, ecology and behaviour of Afrotropical forest flycatchers, especially Platysteirinae, several *Batis* spp. were examined in the collections of the British Museum (Natural History), Tring. It was found that included amongst *Batis poensis* Alexander (*sensu lato*) (including *occultus*) were 4 specimens of *Batis minima* (Verreaux), collected by G. L. Bates, from Bitye, River Ja, Cameroon (3°10′N, 12°20′E): 1 ♂, 5 March 1907, 1 ♂ and 1 ♀, 1 May 1914,

and 1 ♂, 23 May 1924. These details do not seem to have been published before.

The female, which is an adult, had been annotated as 'young' on its label, most probably in reference to its grey breast-band. This character is typical of both females and young of *Batis minima* (see Erard 1975), while females and immatures of *B. poensis* and *B. occultus* Lawson 1984, have a chestnut pectoral band.

A comparison of the notes and drawings made by C.E. on specimens of *Batis* which he examined in the collections of the American Museum of Natural History, (4 ♂♂, 3 ♀♀ from Fernando Po), and of the Muséum National d'Histoire Naturelle, Paris (1 ♂, 1 ♀ from Ivory Coast, and 1 ♂ from Gabon) with material held at Tring (1 ♂, 1 ♀ from Fernando Po), suggests that the differences between *B. poensis* and *B. occultus*, especially in size, and in head, wing and breast patterns, might be not as well marked as described by Lawson (1984). The only character which seems to be consistent is the much blacker upper mantle on *poensis* from Fernando Po. We would be inclined to consider *occultus* as a subspecies of *poensis*, but further study is obviously required, particularly with regard to vocalizations, before a firm conclusion can be reached.

Males of *B. minima* can best be distinguished from males of *B. poensis* by their much blacker mantle and head, their very indistinct white supraloral and superciliary lines, and their somewhat smaller size. It seems to be almost a rule in *Batis* that females belonging to different species are more distinct than males. In the present case, females, besides showing the same differences as males, are best identified by their grey (not chestnut) breast-band as noted above (for more detailed descriptions see Erard 1987).

This is apparently the first record of *B. minima* from Cameroon (see Louette 1981). When Serle & Morel (1977) state that *minima* occurs in Cameroon, they are following White (1963) in considering *poensis* and *minima* (+*ituriensis*) as conspecific. In Cameroon, *Batis poensis (occultus)* is known from Ebolowa (Chappuis *in* Louette 1981), but may occur elsewhere, possibly, indeed, at Bitye, though specimens are lacking. It is also known in north Gabon from various places in Woleu N'Tem (c. 1°30'N, 11°30'E) (Chappuis & Erard, unpubl.) and in northeast Cameroon (Brosset & Erard 1977, 1986).

We may recall here that *B. minima* is an uncommon bird of old second growth, not a primary forest species, and that *B. poensis* inhabits man-made habitats. In southern Cameroon, as well as in Gabon, it favours the vicinity of villages, living in high tree-tops, where it is not at all rare; but it can be difficult to detect unless one knows its calls (for ecological details see Erard 1987).

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Rediscovery of *Malimbus ibadanensis* Elgood, 1958

by J. H. Elgood

Received 8 March 1988

It is good to report that J. S. Ash, with P. Hall and 2 others had an undoubted sighting in secondary forest in November 1987 of a small family party of *Malimbus ibadanensis,* the first record for c.10 years. The species is entered in the Africa Red Data Book as endangered.

Ash has drawn my attention to difficulties that he thinks may have contributed to the failure of recent attempts to find this species at or near Ibadan, Nigeria. He points out the serious inadequacy of the original illustration of the ♀ (Elgood 1958), showing a narrow red throat bridle instead of a fairly broad bib, and Ash thinks he may have mistaken ♀ *ibadanensis* for ♂ *M. scutatus* by looking for the erroneously red bridle. If the differentiating red vent feathering of ♂ *M. scutatus* is concealed, being similar in size and in the amount and arrangement of red on the head and throat, confusion with ♀ *ibadanensis* may well occur. Another possible confusion arises because the ♂ *ibadanensis* is very similar to that of allopatric *cassini,* though the ♀ *cassini* is entirely black and I have no doubt that the late Sir Hugo Marshall (*in* Bannerman 1949) mistook *ibadanensis* for *cassini* when he claimed that he saw *cassini* at Ibadan. Against these pitfalls, in my experience *ibadanensis* is usually encountered in pairs or family parties and the very conspicuous ♂, with red apron, immediately draws one's attention.

However, Ash has a valid point when he states he was mislead by the 1958 illustration of ♀ *ibadanensis* and a more accurate representation appears here in Fig. 1b. That the original illustration was misleading had been realized when the proof reached me in Ibadan too late for alteration, but the text was amended to state that "other females may prove to have a rather wider band of red". Later (Elgood 1975) I was able to confirm that

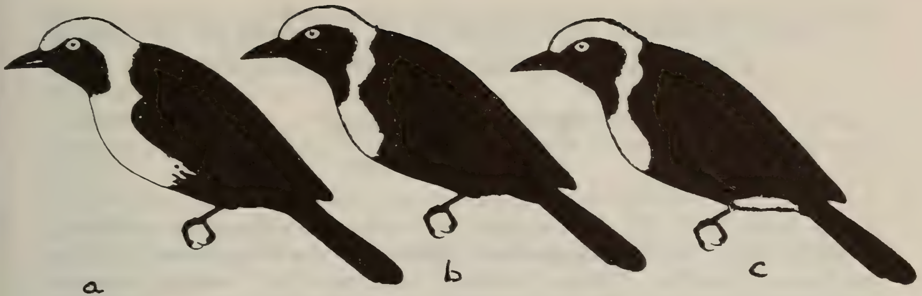

Figure 1. Scarlet (unshaded) and Black plumage patterns in (a) ♂ *Malimbus ibadanensis*, (b) ♀ *M. ibadanensis*, (c) ♂ *M. scutatus*. (Adapted from *Ibis* 100: 621, with acknowledgements to the British Ornithologists' Union.)

"all subsequently collected females" had "possessed a broad red bib". Field's (1979) review of the genus *Malimbus*, illustrated with drawings made by C. H. Fry from British Museum (Nat. Hist.) skins, seemed to me adequate for field workers specifically looking for *M. ibadanensis*; but this view now seems not to have been entirely justified.

Ash tells me that he spent 12 days searching the area around Ibadan, circumscribed by the various localities of known previous occurrence, including 8 days at Ibadan, both on the Campus of the University (2 days) and on the grounds of the International Institute of Tropical Agriculture – IITA – (6 days). It was at the latter (which did not exist in my time), c.5 miles from the University, where I collected the type specimens, that this new encounter occurred. It would seem that Ibadan may still be the centre of distribution of this apparently very local species; however, the decrease in numbers, if real, cannot be attributed to destruction of primary rain forest, since patches of secondary forest, even gardens, have been the habitat for both former and recent encounters.

Although it is impossible with conviction to draw any conclusion as to reduction in population numbers, it is of significance that in the 12 months Oct 1953 to Sep 1954, before it had been established that a new species was involved, I encountered *M. ibadanensis* 13 times in the course of general bird fieldwork, probably averaging c.10 hours per week (1 encounter per 40 hours); whereas Ash, in Nov 1987, had only one encounter in 8 days of intensive search (perhaps c.1 encounter per 80 hours).

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Trans-Andean population of the Large-headed Flatbill *Ramphotrigon megacephala*

by Gary R. Graves

Received 15 March 1988

On 8 April 1947, M. A. Carriker, Jr. collected a flycatcher at Simití (7°58′N, 73°57′W), Department of Bolívar, in the Magdalena Valley of northern Colombia. When Carriker's collection (see Graves, in press) was deposited in the National Museum of Natural History (USNM), Smithsonian Institution, the unique specimen could not be assigned to any known taxon, due in part to the lack of comparative material. Recent comparison of the specimen (USNM 398196, ♂, testes enlarged) with the material at the American Museum of Natural History (AMNH) indicates that it represents an unusually pale example, and first trans-Andean record, of the Large-headed Flatbill *Ramphotrigon megacephala*, a little known species with a large discontinuous distribution in western Amazonia (Traylor 1979, Parker 1984).

This discovery prompted a brief review of the taxonomy of subspecies of *R. megacephala*, namely *boliviana*, *venezuelensis* and *pectoralis* from the upper drainages of the Amazon and Orinoco Rivers, and the examination of nearly all the specimens mentioned in their original descriptions (Zimmer 1939, Phelps & Gilliard 1941, Zimmer & Phelps 1947).

Although quite distinct from the nominate *megacephala* of south-eastern Brazil and adjacent Paraguay and Argentina (Traylor 1979), the Amazonian populations exhibit, at best, only minor inter-population variation in plumage colour and size. For example, the holotype of *R. m. pectoralis* from the Territory of Amazonas, Venezuela, is practically indistinguishable in plumage from the type series of *R. m. boliviana* collected in the Department of Cochabamba, Bolivia. The holotype of *R. m. venezuelensis* from northwestern Venezuela is paler than *R. m. pectoralis*, but 3, more southerly, specimens from the Río Duda, Department of Meta, Colombia, are intermediate in plumage colour. Considering the small numbers of specimens available for study, possible variation due to plumage wear, age, and sex, and the great distances between scattered specimen localities, variation among those populations may be purely clinal.

Compared to the aforementioned series, the Simití specimen (measurements in mm: wing chord, 63.9; tail, 55.1; culmen from base, 14.5; tarsus, 16.7) is distinctively paler. It is closest in appearance to the holotype of *venezuelensis*, but differs from that specimen and others in having the feathers above the nostrils yellower, and a less dusky throat and pectoral band. This suggests that the Simití bird represents a resident, perhaps subspecifically distinct, population. However, more specimens from both sides of the Andes in Colombia and from Venezuela are needed before the taxonomy can adequately be determined.

Parker (1984) reported that *R. megacephala* is closely associated with bamboo in western Amazonia. Carriker noted in his field catalogue that

he hunted in a low swampy area vegetated mostly with bamboo on the morning the Simití specimen was collected.

SPECIMENS EXAMINED

Ramphotrigon m. megacephala: **Argentina.** Misiones: Arroyo Urugua-i (AMNH, 6 ♂♂, 4 ♀♀). **Brazil.** Minas Gérais: Serra do Caparaó (AMNH, 1 ♂).

R. m. boliviana: **Bolivia.** Cochabamba: Río Chimoré (AMNH, 2 ♂♂ (including holotype), 1 ♀).

R. m. venezuelensis: **Venezuela.** Barinas: Ciudad Bolivia (AMNH, 1 ♂—holotype).

R. m. pectoralis: **Venezuela.** Amazonas: Sierra Parima (AMNH, 1 ♀—holotype). **Colombia.** Meta: Río Duda (AMNH, 3 ♂♂).

Subspecies not determined: **Colombia:** Bolívar: Simití (USNM, 1 ♂).

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Distributional data on some non-passerine species in Bolivia

by J. Cabot & P. Serrano

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New Departmental records of some non-passerine species in Bolivia are given here, following on Remsen *et al.* (1985). Also for those species already known from Dpts. of the country, new information is given on species found in habitats other than their usual ones. Specimens collected are deposited in the collection of the Estacion Biologica Doñana (EBD).

ORNATE TINAMOU *Nothoprocta ornata*

Known from La Paz, Cochabamba, Oruro and Potosi Dpts. (Remsen & Traylor, in press). Two specimens (EBD 5648A, 5649A), 24 Nov '82, in Cumbre Impora (21°10'S, 65°20'W), Prov. Sud-Cincti, Dpt. Chuquisaca, are a new departmental record and the southernmost locality recorded in Bolivia.

BRUSHLAND TINAMOU *Nothoprocta cinerascens*

One specimen (EBD 11297A), 23 Sep '87, "Cerro Colorado", (19°27'S and 62°21'W), Prov. Velasco, Dpt. Santa Cruz. Known only from Villamontes, Dpt. Tarija (Bond & Meyer de Schauensee 1943). Both localities are in the Chaquean region of Bolivia.

DARWIN'S NOTHURA *Nothura darwini*

Singletons seen, 27 Jul '84, 20 km NW of Sucre, Prov. Oropesa and 21 Nov '84, 5 km E of Sucre, Prov. Yamparaez. Both localities are in Chuquisaca Dpt. Six specimens collected 17 and 18 Nov '88 at Vallegrande, Santa Cruz Dept. Known from La Paz, Oruru, Cochabamba and Tarija Departments (Remsen & Traylor, in press.)

COCOI HERON *Ardea cocoi*

Widespread in Bolivian lowlands (Remsen & Traylor, in press). One was at the unusual altitude of 2500 m, 23 Jul '85, in Laguna Urkupiña, 4 km S of Quillacollo, Cochabamba Dpt.

GREEN-BACKED HERON *Butorides striatus*

Widespread in the lowlands of Bolivia (Remsen & Traylor, in press). One specimen (EBD 4379A) was collected at the exceptional altitude of 3700 m, 10 Dec '81, Pongo, Prov. Murillo, La Paz Dpt., above the tree line on the eastern Andean slope.

BOAT-BILLED HERON *Cochlearius cochlearius*

One specimen (EBD 7455A) collected 27 Sep '84, between Palos Blancos and Sapecho, Alto Beni, Prov Nord-Yungas, La Paz Dpt., in a stream in the easternmost foothills of the eastern Andes. Recorded previously in Dpts. Santa Cruz (Meyer de Schauensee 1966), Beni (Gyldenstolpe 1945) and Cochabamba (Remsen *et al.* 1985).

FULVOUS WHISTLING-DUCK *Dendrocygna bicolor*

One seen 29 Jul '85, Laguna Alalay, Prov. Cercado, Cochabamba Dpt., at roost on a little island with 2 Black-Bellied Whistling-Duck *Dendrocygna autumnalis*. Previously recorded Dpts. of Beni (Schmitt & Schmitt 1987), Santa Cruz (Remsen & Ridgely 1980) and Tarija (Remsen & Traylor 1983).

ANDEAN GOOSE *Chloephaga melanoptera*

Known from la Paz, Cochabamba and Oruro Dpts. (Remsen & Traylor, in press). 2 specimens (EBD 5640A and EBD 5642A) collected 10 Nov '82, Laguna Colorada, Prov Sud-Lipez, Dpt. Potosi, enlarges their range in Bolivia.

TORRENT DUCK *Merganetta armata*

Found in streams of the eastern Andean slopes of the Dpts. la Paz (Niethammer 1953), Cochabamba (Bond & Meyer de Schauensee 1943), Chuquisaca (Remsen *et al.* 1985), Tarija (Hellmayr & Conover 1948) and Potosi (Menegaux 1909). Uncommon in the western part of the eastern Andes. A pair was observed in Suches river, Ulla-Ulla Reserve, Prov. Saavedra, La Paz Dpt., 4400 m. during summer 1982.

CINNAMON TEAL *Anas cyanoptera*

One specimen (EBD 5993A) collected 7 Nov '82, Villa Alota, Prov. Nord-Lipez, Dpto. Potosi, 3800 m . Has been recorded in Dpts. La Paz (Allen 1889), Cochabamba (Remsen *et al.* 1985) and Oruro (Schmitt & Schmitt 1987).

TURKEY VULTURE *Cathartes aura*

Widespread in Bolivia (Remsen & Traylor, in press). Several were seen near the city of Sucre, Chuquisaca Dpt., 14 Jul '84. Although typical of lowlands, one was observed in cordilleran areas of Ulla-Ulla Reserve (Serrano & Cabot 1982), and another on 11 May '85 at Altiplano Central, Konani, 3800 m. Prov. Aroma, La Paz Dpt., an altitudinal record for this species in Bolivia.

BROAD-WINGED HAWK *Buteo platypterus*

One individual (EBD 3363A), 3 Nov '85, "Campamento 6 Agosto" (15°30'S, 75°10'W), Alto Beni, Prov. Ballivian, Beni Dpt., in humid forest of the eastern foothills of the eastern Andes, 800 m. Known from Dpts. Cochabamba (Bond & Meyer de Schauensee 1943) and Santa Cruz (Remsen *et al.* 1985).

RED-BACKED HAWK *Buteo polyosoma*

A pale phase bird was seen 15 Jul '84, 20 km N of Sucre, Chuquisaca Dpt.; 2 specimens, (EBD 11210A and 11225A) were collected 17 and 19 Sep '86, Cerro Colorado, Prov. Cordillera, Santa Cruz Dpt. The latter is the first record of this species in Bollivian lowlands; normally it is found in temperate valleys and the puna (Cabot & Serrano 1986). Known from Dpts. Cochabamba and Oruro (Chubb 1919), Tarija (Lönnberg 1903) and La Paz (Meyer de Schauensee 1966).

PUNA HAWK *Buteo poecilochrous*

One specimen (EBD 7431A) collected 28 Jul '84, Yura, Prov. Quijarro, Potosi Dpt. at 3840 m. This species is characteristic of the puna and the cordilleran zones (Cabot & Serrano 1986), and has been recorded in Dpts. Cochabamba, Oruro (Bond & Meyer de Schauensee 1943) and La Paz (Vaurie 1962) Dpts.

MOUNTAIN CARACARA *Phalcoboenus megalopterus*

Recorded in Andean regions of La Paz. Potosi (Bond & Meyer de Schauensee 1943), Cochabamba (Hellmayr 1921) and Tarija (Nores & Izurieta 1984) Dpts. New departmental records are of several seen 14 Jul '84, near Sucre city, Chuquisaca Dpt. and numerous individuals seen 16 Aug '84, 4 km S of Oruro city. One individual 17 Aug '84, seen at Humani and another at Andakare, Prov. Carangas, Dpt. Oruro.

SUN-GREBE *Heliornis fulica*

One seen 5 Nov '84 in a small stream between Palos Blancos and Sapecho, Prov. Nord-Yungas, La Paz Dpt. Known from Dpts. Beni (Gyldenstolpe 1945), Cochabamba, Santa Cruz and Tarija (Remsen *et al.* 1985).

WATTLE JACANA *Jacana jacana*

Widely distributed in Bolivian lowlands (Remsen & Traylor in press). One was seen on 12 Nov '85 at Laguna Alalay, at 2500 m near Cochabamba city, an exceptional altitude.

ANDEAN LAPWING *Vanellus resplendens*

One seen 25 Jul '84 at Yotala, Prov. Yamparaez, at 3400 m, Chuquisaca Dpt.

BLACK-NECKED STILT *Himantopus mexicanus*

Three seen on 11 Sep '83 at Huarina, Titikaka Lake, Prov. Omasuyos, La Paz Dpt. at 3800 m, and 8 others, 6 Mar '84, in temporary ponds near Viacha, at 3800 m, both localities in Dpt. La Plaz. Previously recorded in Dpts. Cochabamba, Santa Cruz, Oruro and Tarija (Remsen & Traylor, in press).

HUDSONIAN GODWIT *Limosa haemastica*

One seen at Viacha on the same date and in the same habitat as *H. mexicanus* (above). Previously in Dpts Oruro (Pearson 1975) and Santa Cruz (Parker & Rowlett 1984).

SPOTTED SANDPIPER *Actitis macularia*

One specimen (EBD 5515A) collected 27 Sep '82 in Ulla-Ulla reserve at 4460 m, Prov. Saavedra, Dpt. La Paz; 1 specimen (EBD 6038A) collected 2 Nov '82 at Coroico river at 1725 mm, Coroico, Prov Sud-Yungas, Dpt. La Paz. Recorded previously in Bolivian lowlands (Remsen & Traylor, in press).

RUFOUS-BELLIED SEEDSNIPE *Attagis gayi*

Known from Dpts. La Paz and Cochabamba (Bond & Meyer de Schauensee 1943) almost up to perpetual snow. Specimens (EBD 5651A; 5652A; 5653A; 5654A and 5790A) were collected Nov '82 on the periphery of Laguna Colorada, Prov. Sud-Lipez, Dpt. Potosi. This is a range extension and the first record of this species in the Altiplano; previous records are from the cordilleran zones. The Potosi specimens are pale dorsally, with less flank barring and almost without barring on the undertail coverts, agreeing with the nominate subspecies (Blake 1977), differing from those collected in Dpt. La Paz belonging to *simonsii*.

FRANKLIN'S GULL *Larus pipixcan*

Recorded previously only at Titikaka lake, Dpt. La Paz. A specimen (EBD 8783A) was collected 21 Nov '82 at Quetena, Prov. Sud-Lipez, Dpt. Potosi.

BLACK SKIMMER *Rhynchops niger*

Known from Lake Poopo, Dpts. Oruro (Parker & Rowlett 1984), La Paz (Niethammer 1953) and Santa Cruz (Remsen *et al.* 1985). New records are 6 seen, Sep '82 in the Chapare river, Prov. Chapare and 3 others Apr '84, in Laguna Alalay, Prov. Cercado. Both localities are in Dpt. Cochabamba.

MITRED PARAKEET *Aratinga mitrata*

Several flocks were seen on 28 Nov '84 in the temperate valleys between Dpts. Padilla and Sucre. Previously recorded in Dpts. Santa Cruz, Oruro, La Paz and Cochabamba (Remsen & Traylor, in press).

PLUM-CROWNED PARROT *Pionus tumultuosus*

One specimen (EBD 6316A) collected 10 Mar '83 at Yerbabuena (17°55′S, 64°04′W), Prov. Florida, Dpt. Santa Cruz. Known from Dpts. Cochabamba (Bond & Meyer de Schauensee 1943) and La Paz (Sclater & Salvin 1879).

Figure 1. Map of Bolivia with localities cited in the text. 1. Pando Dpt. 2. La Paz Dpt. 3. Beni Dpt. 4. Cochabamba Dpt. 5. Santa Cruz Dpt. 6. Oruro Dpt. 7. Potosí Dpt. 8. Chuquisaca Dpt. 9. Tarija Dpt.

BURROWING OWL *Athene cunicularia*

One specimen (EBD 5960A) collected 5 Nov '82 near Challapata at 3750 m, Prov. Avaroa, Dpt. Oruro. Recorded previously in the highlands of Bolivia in Dpts. La Paz (Niethammer 1953, Serrano & Anderson 1987) and Potosi (Bond & Meyer de Schauensee 1943). One (EBD 11280A) collected 26 Aug '86, "Los Fierros" (14°20'S, 61°W), Prov. Cordillera, Dpt. Santa Cruz is the easternmost known Bolivian locality of this species.

WHITE-BELLIED HUMMINGBIRD *Amazilia chionogaster*

Only previously known from the western part of Bolivia in the temperate valleys of Dpts. La Paz, Cochabamba, Santa Cruz, Chuquisaca and Tarija (Bond & Meyer de Schauensee 1943). A specimen (EBD 11135A) was collected 26 Aug '86 at Serrania Caparuch (14°33'S, 61°11'W), Prov. Velasco, Dpt. Santa Cruz.

GREEN-TAILED TRAINBEARER *Lesbia nuna*

According to Remsen & Traylor (in press) this species is distributed in the Bolivian temperate valleys. One specimen (EBD 3168A) was collected 17 Jan '82 at Charazani, 3400 m, Prov. Saavedra, Dpt. La Paz on the eastern Andean slopes in the upper humid subtropical forest below the

tree line. This habitat is very different from that previously reported for this species in Bolivia.

GREY-CHEEKED NUNLET *Nonnula ruficapilla*

One specimen (EBD 11078A) collected 26 Sep '86 at "Los Fierros", Prov. Velasco, Dpt. Santa Cruz. Known from Dpts Pando and La Paz (Remsen & Traylor, in press).

CHECKERED WOODPECKER *Picoides mixtus*

One specimen (EBD 11128A) collected 29 Sep '86 at "Perforacion" (19°30'S, 62°30'W), Prov. Cordillera. Dpt. Santa Cruz. Known previously only from Dpt. Oruro (Laubmann 1930).

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Notes on Philippine birds, 12. An undescribed subspecies of *Centropus viridis*

by Kenneth C. Parkes & David M. Niles

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The Philippine Coucal *Centropus viridis* is an abundant species, found virtually throughout the Philippine archipelago. Three subspecies are recognized at present (duPont 1971, *Philippine Birds,* Delaware Mus. Nat. Hist.), of which 2 are melanic: the large *C. v. carpenteri* Mearns of the Batanes Islands north of Luzon; and *C. v. mindorensis* (Steere) of the island of Mindoro. No geographic variation has been suggested within the 'normally' pigmented populations (adults black glossed with green except for wings, which are chestnut). DMN measured the series of *C. v. viridis* in the Delaware Museum of Natural History (DMNH), and found no significant differences in wing, tail, exposed culmen and tarsus length among samples of populations from the islands of Catanduanes, Cebu, Dinagat, Luzon, Leyte, Marinduque, Masbate, Mindanao, Negros, Panay, Polillo, Samar, Siargao, Sibuyan, Tablas and Ticao.

The small island of Fuga is one of the Babuyanes group, lying in Luzon Strait between Luzon and the Batanes group. A collection of birds from Fuga recently received by the DMNH includes 5 adult specimens of *Centropus viridis*. These clearly represent an undescribed subspecies linking the nominate race with *carpenteri* of the Batanes; it may be called

Centropus viridis major subsp. nov.

Holotype. DMNH 70326, adult female, collected at 200 ft a.s.l. on Fuga Island, Babuyanes group, Philippines, on 16 March 1980, by Filipino collectors for the DMNH.

Description. Similar in colour to nominate *viridis* of nearby Luzon and the Philippines in general, but wings decidedly longer, and tail, exposed culmen and tarsus all averaging significantly longer (Table 1). Similar in its large size to the melanic race *carpenteri* of the Batanes Islands to the

TABLE 1
Measurements and statistical comparisons of *Centropus viridis*
(H_o: $\bar{X}_{Fuga} = \bar{X}_{Luzon}$; H_1: $\bar{X}_{Fuga} / \bar{X}_{Luzon}$)

	Wing			Tail			Culmen			Tarsus		
	$\bar{X}$	s	n	$\bar{X}$	s	n	$\bar{X}$	s	n	$\bar{X}$	s	n
Fuga ♂♂	175.0	6.24	3	260.7	5.53	3	27.6	1.29	3	39.7	0.56	3
Luzon ♂♂	151.4	5.99	20	230.4	9.96	17	24.9	1.16	20	37.3	1.72	20
t_s		6.34			5.06			3.71			2.35	
P		<0.001			<0.001			<0.01			<0.05	
Fuga ♀♀	188.0	3.54	2	287.3	4.60	2	28.2	0.28	2	42.6	0.99	2
Luzon ♀♀	162.3	5.57	12	252.1	12.23	11	26.8	0.88	12	40.2	1.40	12
t_s		6.20			3.90			2.17			2.29	
P		<0.001			<0.01			≅0.05			<0.05	

north, but pigmentation like that of *viridis*. Because *major* and *carpenteri* differ in colour, measurements of *carpenteri* were not treated statistically for the table. For purposes of direct comparison, one male *carpenteri* measured wing 173, tail 269, culmen 27.5, and tarsus 38.5 mm. For 3 females, the mean measurements (range in parentheses) were wing 189 (181.5–195), tail 263.2 (246–284.5), culmen 32.2 (31.1–33.6), and tarsus 42.3 mm (41.2–43.1).

Specimens examined (all in DMNH except *carpenteri*). *C. v. viridis*: Luzon, 32; Marinduque, 12; Sibuyan, 5; Tablas, 1; Ticao, 3; Masbate, 1; Polillo, 2; Catanduanes, 5; Samar, 2; Leyte, 3; Panay, 1; Negros, 4; Cebu, 6; Dinagat, 2; Siargao, 5; Mindanao, 18. *C. v. mindorensis*: Mindoro, 10. *C. v. carpenteri* (USNM): Batanes, 4. *C. v. major*: Fuga, 5.

Remarks. The series from the large island of Luzon was broken down into 2 samples to see whether the northernmost specimens were the largest as might be expected, as these are the nearest to the range of *major*. Although no significant mensural differences were found, the northern birds averaged shorter in wing length than the southern, the reverse of what might be expected. From northern Luzon, 4 females averaged 159.9 mm (range 157.5–162) and 6 males 149.1 mm (142.5–156). From southern Luzon, 8 females averaged 163.5 mm (153–173) and 14 males 152.4 mm (143–166). In contrast, the wings of specimens from Fuga (*major*) averaged 188 mm (185.5, 190.5) for 2 females and 175 mm (170–182) for 3 males.

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The taxonomic status of the Madagascar Cuckoo *Cuculus (poliocephalus) rochii* and its occurrence on the African mainland, including southern Africa

by J. H. Becking

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Cunningham-van Someren (1988) records the occurrence of the Shy Albatross *Diomedea cauta* in Kenya on the basis of a specimen obtained at sea near Mombasa in November 1986, and mentions that the same severe weather conditions prevailing at that time probably accounted for a first record of the Lesser Cuckoo *Cuculus poliocephalus rochii* in Natal, South Africa. I would like here to draw attention to the fact that the Madagascar Cuckoo is not a subspecies of the Lesser Cuckoo *Cuculus poliocephalus*, but deserves specific status as *Cuculus rochii*, a conclusion I reached a considerable time ago, discussing it as early as 1973 with the late Dr C. W. Benson, who agreed with my conclusion. In addition, the above-cited record is not, in fact, the *first* record of the Madagascar Cuckoo in Natal.

Taxonomic status of the Madagascar Cuckoo

Peters (1940) regarded the Madagascar Cuckoo as a subspecies ('*rochii*') of the Lesser Cuckoo *Cuculus poliocephalus*, and at that time nothing was known of the occurrence of the latter ('nominate') species anywhere in Africa (Peters 1940: 20). Although in the last decades there have been a number of occurrences in Africa, it seems appropriate to review the available material of the *poliocephalus/rochii* taxa.

The main criterion for separating the Madagascar Cuckoo '*Cuculus rochii*' from the Lesser Cuckoo 'nominate *Cuculus poliocephalus*' and for raising it to specific status, I consider to be the difference in vocalization. *C. rochii* produces phrases of 4 evenly spaced notes, ranging in frequency between 0.7 and 1.2 KHz, in which each note starts high, but proceeds with a rapid slur downwards. In contrast to this, *C. poliocephalus* produces repetitive phrases of 6, or occasionally 5, notes, much more high-pitched, having a frequency between 1.5 and 2.5 KHz. Moreover, in *poliocephalus*, each note rises and falls in pitch, audible to the human ear as "*kýoh*" (Fig. 1).

Verbalized, the call of *rochii* can be represented by the syllables "*ka-ka-ká-ko*", and that of *poliocephalus* by "*kyo-kyoh-kýoh-kýoh-kýoh-kyoh*" in the case of the 6-note form. In addition, the individual sounds that *poliocephalus* makes in its call-phrase are much shorter, the 6-note phrase taking about the same time (1.0 sec) as *C. rochii* takes for its 4-note phrase (see Fig. 1).

I have been able to make adequate and accurate comparisons between the calls of all other Asiatic and African cuckoo species, from my own tape

recordings and those of colleagues. From all of these, sonograms have been made and were used to allocate the former "Lesser Cuckoo" in SE Asia *Cuculus poliocephalus lepidus* and its associated subspecies *C.p. insulindae* to the Himalayan Cuckoo *Cuculus saturatus* (Wells & Becking 1975, Becking 1975). The last note of *C. rochii*'s call is not always distinctly lower than the preceding ones; there exists a considerable amount of variation in the vocalizations. More details on the differences in vocalization of various individuals or populations of *rochii* and the specific female call will be published elsewhere.

It is safe to conclude from these data that the only cuckoo vocalization reminiscent of the call of *C. rochii* is superficially that of the Indian Cuckoo *Cuculus micropterus*, which also produces phrases of 4 elements, with a different phonetic timbre and melody obvious to the human ear and apparent in sonograms (Fig. 1). A measure of the degree of resemblance of the call of *rochii* to that of *micropterus*, as observed by the human ear, can be found in their native names. The Malagasy name (current in Tananariva) for *rochii* is *Taon-taon-kafa*, an onomatopoeic interpretation of the call. In translation *taon(a)* = year and *kafa* or *hafa* = next (suggesting the meaning "I will make my nest next year"). Cowan (1881) gives the following local native names for the Madagascar Cuckoo: *Kakafotra* (locality: Hova), *Kankafotsa* (Betsileo), *Kankafo* (Bara), *Kakafatra*, *Kakafo* (Tanala), *Taotaonkafa* (N. Sakalava), *Kankafotsa* (N Betsimisaraka), *Boto-kong'kong* (N Antakarana), all of them onomatopoeic interpretations. The onomatopoeic interpretations of the call of *micropterus* on Java are: "*Ka-kang-ká-to*"(*kakang*=brother and *káto* or *gátok*=the beating on wood, Javanese) or more illustratively "*Opat-pátok*" (=the 4 sticks, Sundanese) and "*Belánda mábok*" (*Belanda*=Dutchman and *mabok*=drunk, Indonesian/Malayan, saying literally "The Dutchmen are drunk").

Apart from its vocalization, *rochii* can be separated from *poliocephalus* by a number of biometrical and morphological characteristics. Specimens of *rochii* are relatively larger and males especially have greater wing (160–179 mm) and tail (135–155 mm) measurements compared with 149–161 mm and 124–142 mm in *poliocephalus* (see Appendix 1). The larger size of the Madagascar Cuckoo is also reflected in the weights, which range between c.60–65 g in *rochii* (Benson *et al.* 1976) and c.46–56 g in adult *poliocephalus* (see Appendix 2).

Nestlings, fledglings still being fed by foster-parents, and immatures of *rochii* normally have plumages with hepatic features (that is to say, reddish brown feathers with dark brown to black transverse bands); yet a characteristic distinguishing *rochii* from *poliocephalus* is the apparently complete absence of a wholly-hepatic female plumage in *rochii*, while hepatic *poliocephalus* females occur very frequently. In all the females which I have seen of the Madagascar Cuckoo in various collections, only a few partially-hepatic specimens occur. One of these is an old, formerly mounted, specimen from October 1880, obtained in Imerina, Central Madagascar (leg. J.M. Hildebrandt), in the Senckenberg Museum, Frankfurt (SM) (reg. no. 27781). Although it shows many hepatic features, it has, however, some blue on the throat, a bluish back, and slate-blue upper tail-coverts. Its plumage is certainly not fully adult, and it

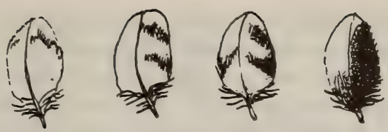

Figure 2. Differences in the black-grey patterning on the small feathers covering the carpo-metacarpal joint of *Cuculus rochii* (the 3 left feathers) and *Cuculus poliocephalus* (right feather). 2 × life-size.

might even be wrongly sexed, as the wing (174 mm, left) and tail (144 mm) measurements are within the male range. Two females in the Paris (MNHN) museum are in intermediate plumage, changing from hepatic to blue, i.e. one specimen from Andapa (leg. A. L. Rand, 15. viii. 1930), the other from Tuléar (leg. Ph. Milon, 18. xi. 1947). The dates suggest that they are 2nd-year birds and probably ready to breed in this plumage.

To my knowledge, none of the plumages of *rochii* ever exhibits any rusty or buffy in the grey areas on the throat and the sides of the neck, whereas this is quite common in *poliocephalus*. Furthermore, in adult *rochii*, the small feathers over the upper edge of the carpo-metacarpal joint on the upperside of the wing have a spotted or banded pattern, whereas in adult *poliocephalus*, these small feathers normally have a grey/black inner vane and a completely white or whitish outer vane (see Fig. 2). The latter feature is especially prominent in adult specimens of the blue phase of *poliocephalus*, but in immatures and hepatic females this feature is more obscure.

Finally, there are some minor morphological differences between both species. In adult specimens of *rochii*, the angle between the left and right lower mandible bones (namely the dentary and surangular bones) is wider and the arch of the symphysis connecting them more rounded; in *poliocephalus*, the angle between these 2 lower mandible bones is somewhat more acute and the arch connecting them rostrally is more pointed (see Fig. 3).

Occurrence of *Cuculus rochii* on the African mainland

Cunningham-van Someren's (1988) record of *Cuculus* (*poliocephalus*) *rochii*, obtained in November 1986, is incorrectly reported as the first from Natal. There is, however, in the British Museum (Natural History) (BMNH) at Tring a previously unrecognized *Cuculus rochii* specimen from Natal. It is an immature bird, unsexed and undated (BMNH reg. no. 89.6.25.94), obtained in Durban (29°53′S, 31°00′E), Natal, collected by Henry Gordge during last century, and formerly in the Shelley Museum collection.

From recoveries of *C. rochii* elsewhere on the mainland of Africa, it is clear that this cuckoo migrates from Madagascar (Malagasy) in the off-season. Its principal migration into Africa is northwestward or westward, and only occasionally or accidently is it more southwestwards (see Fig. 4). The main breeding season in Madagascar falls in November and December. The first birds returning from their winter quarters on the African mainland arrive in SW Madagascar at the end of August and

increase in numbers during September (as is apparent from their calls), with a distinct peak about the middle of October (O. Appert). The latest post-breeding birds observed or collected in Madagascar are from the end of March or the beginning of April. Accordingly, most of the extensive skin material of *C. rochii* in the major museums, i.e. BMNH (Tring), Cambridge Univ. Museum (UK), RMNH (Leiden), MNHN (Paris), Natur-Museum Senckenberg (SM, Frankfurt), Museum Koenig (Bonn), Naturhistoriska Riksmuseet (NR, Stockholm), and AMNH (New York), as examined by me, was collected in Madagascar between October and December, with some collected in August and September or between January and March. The sole exception is an immature (juvenile ?) specimen collected on 4. v. 1881 (BMNH reg. no. 89.6.25.93, leg. Rev. W. D. Cowan) in Madagascar (locality not given). (William Deans Cowan was a missionary in Antananarivo (= Tananarive), Central Madagascar and the author of a remarkable booklet (see references on Madagascar birds and their native names).

Most *rochii* from the African mainland have been obtained in the eastern Congo basin (see Fig. 4), between the beginning of June and the middle of August, i.e. outside the breeding season. I have seen the greater portion of all extant material of *rochii* from the African mainland, but some specimens could not be traced or could not be obtained on loan, and I was, in fact, involved in the identification of some of these specimens (e.g. those obtained by Dr C. W. Benson and the mist-netting records of Mrs D. B. Hanmer).

The following material I have actually examined: At NR, Stockholm, there is one specimen of *rochii* obtained at Kasindi (0°03′N, 29°43′E), E. Congo (leg. E. Arrhenius) in August 1913 (NR reg. no. 177). The Koninklijk Museum voor Midden-Afrika (KMMA, Tervuren, Belgium), has a number of *rochii* specimens: from Kamituga (3°04′S, 28°11′E), Itombwe, E. Zaire (Congo), collected on 6.vi.1958 (leg. A. Prigogine); from Bulaimu (0°37′N, 29°50′E), Kivu district, E. Zaire, collected on 30.vi.1912 (leg. M. Pilette); from Idjwi Island in Lake Kivu (1°56′S–2°17′S, 28°58′E–29°07′E), Itombwe, 2 specimens, one collected at 1860 m on 11.vii.1965, the other collected on 14.viii.1969 (both leg. A. Prigogine) (see Schouteden 1950, 1968, Prigogine 1971). Two other *rochii* specimens from the Congo territory are in AMNH (New York). One specimen was collected at Tshibati (2°14′S, 28°47′E) at 1970 m on the southwestern side of Lake Kivu in the eastern highlands of Zaire on 15.vi.1953 (leg. J. P. and R. T. Chapin, AMNH reg. no. 764020), in a mixed habitat of fire-affected montane bamboo, dry evergreen forest and scrub woodland (see Chapin *et al.* 1987). The other specimen was collected at Avakubi (1°20′N, 27°55′E), Haut-Zaire, on 4.vii.1914 (leg. J. P. Chapin, Congo Expedition, AMNH reg. no. 159064).

I have examined only 2 specimens, apart from the South African record mentioned above, which were *not* obtained in the Congo basin, but somewhere in between the Congo and the east coast. Of these, one was collected in Gombe (0°30′N, 32°28′E), 30 km NW of Kampala, close to Lake Victoria, Uganda on 9.viii.1905 (leg. F. J. Jackson, AMNH reg. no. 265295). The other, obtained in Kasama (10°10′S, 37°10′E), Zambia, on 16.xi.1954 (leg. C. W. Benson), is preserved in the Natural History

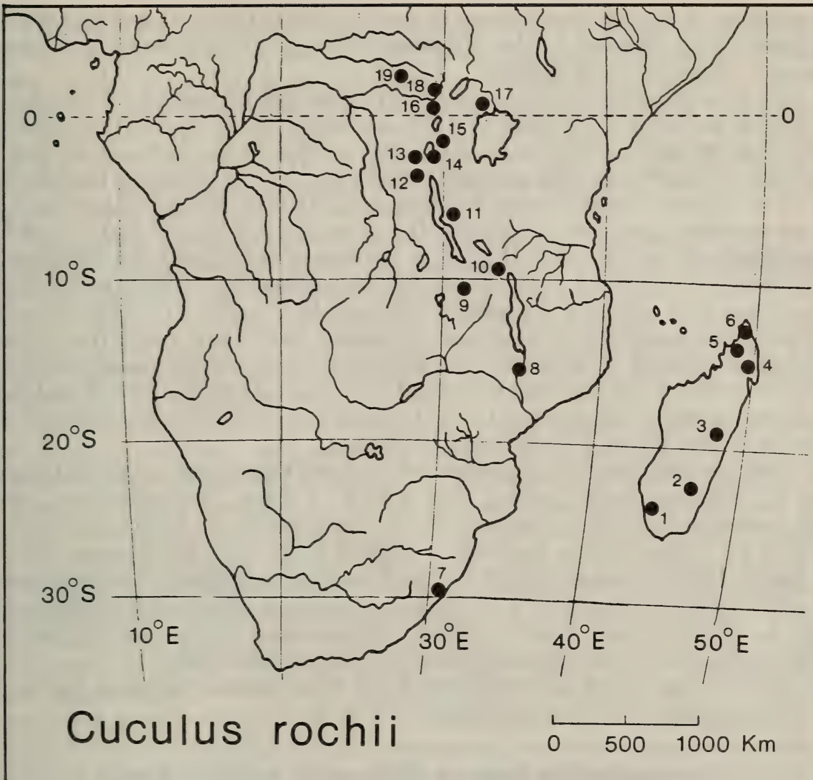

Figure 4. Map of southern Africa, with localities from which *Cuculus rochii* is known. Some localities in Madagascar, where *C. rochii* occurs throughout the island in the wooded (wetter) regions are given. Only well-known localities are indicated, from south to north. **Madagascar:** (1) Tuléar (23°20′S, 43°41′E), (2) Ivohibe (22°28′S, 46°53′E), (3) Périnet (18°56′S, 48°26′E), (4) Andapa (14°53′S, 50°16′E), (5) Coast opposite Nossi Bé Isl. (13°22′S, 48°25′E) and (6) Mt d'Ambre (11°58′S, 49°14′E). **Mainland Africa.** Localities of collected specimens (one mist-netted) from south to north: (7) Durban, Natal, S. Africa (29°53′S, 31°00′E), (8) Nchalo, Southern Region Malaŵi, Chikwawa Distr. (16°16′S, 34°55′E), (9) Kasama, Zambia (10°10′S, 37°10′E), (10) Isoko, Rungwe Distr., S. Tanzania (9°25′S, 33°31′E), (11) Lake Tanganyika, Tanzania/E. Zaire (c.4°51′S, 29°41′E), (12) Kamituga, Itombwe, E. Zaire (Congo) (3°04′S, 28°11′E), (13) Tshibati, SW. side of Lake Kivu, E. Zaire (2°14′S, 28°47′E), (14) Idjwi Isl. in Lake Kivu, Itombwe, E. Zaire (1°56′S–2°17′S, 28°58′E–29°07′E), (15) Kisenyi (or Gisenye), Lake Kivu, Rwanda (1°41′S, 29°15′E), (16) Kasindi, E. Zaire (0°03′N, 29°43′E), (17) Gombe, Lake Victoria, Uganda (0°30′N, 32°28′E), (18) Bulaimu, Kivu Distr. E. Zaire (0°37′N, 29°50′E) and (19) Avakubi, E. Zaire (1°20′N, 27°55′E).

Museum of Zimbabwe (NHMZ), Bulawayo (see Benson 1956 and Benson *et al.* 1971) and was identified as *C.* (*poliocephalus*) *rochii*. A third specimen collected by C. W. Benson and sexed as a male, was obtained on 13.ix.1947 at Isoko (9°25′S, 33°31′E), Rungwe District, southern Tanzania. On the basis of its wing length (163 mm) and weight, it is very

probably *rochii* (see also Benson & Benson 1949, 1977). It was originally presented by Benson to the Transvaal Museum in Pretoria, but is no longer there (Dr C. A. Kemp).

An immature cuckoo, mist-netted, ringed and released by Mrs D. B. Hanmer at Nchalo (16°16′S, 34°55′E, altitude c.60 m), Malaŵi, Southern Region, District Chikwawa (c. 26 km SE of Chikwawa, on the south bank of Shiré River) was also probably *rochii* in view of its wing length (as immature) and weight (wing 159 mm, tail 141 mm, weight 62 g), since 2 *poliocephalus* specimens, netted at the same place (14.iv.87 and 16.iv.87) weighed only 46.9 g and 47.5 g (D. B. Hanmer) (see below). An additional argument for its being *rochii* is the date of capture: 4.v.1979. An identical bird was seen again in the same garden on 12.v. and 9.vi. 1979, but not afterwards; the species is very rare in Nchalo, so it is very likely that it was the same bird (D. B. Hanmer). An additional argument for assigning this bird to *rochii* is the fact that it showed interrupted moult in P 1–4 and S 8 (counting from mid wing) (D. B. Hanmer), which is to be expected in *rochii* in May/June, but not in *poliocephalus*.

Two further *Cuculus* specimens which have been cited in the literature as *C.* (*poliocephalus*) *rochii*, but which I have not examined, are an immature female obtained by V. Stegmann at Kisenyi (1°41′S, 29°15′E), Lake Kivu, Rwanda on 26.vi.1908 (see Reichenow 1912, Chapin 1939, Schouteden 1950), and another specimen obtained near Lake Tanganyika (c. 4°51′S, 29°41′E), sex unrecorded and date unknown, by E. Storms (see Dubois 1888, Schouteden 1950). The Rwanda specimen at least will almost certainly turn out to be *rochii*.

All localities of *rochii* specimens from the African mainland which I have examined myself are indicated in Fig. 4.

The migration pattern of *Cuculus poliocephalus*

Cuculus poliocephalus has a completely different migration pattern from that of *C. rochii*, for it is a long-distance migrant, covering large expanses of open sea. Breeding in Japan and China and along the Himalayas from Pakistan through Kashmir, Nepal, Bhutan and Assam to the mountain regions of Burma, it migrates at the beginning of the northern winter to southern India and Sri Lanka (Ceylon); the northeastern populations, from Japan and China especially, follow an eastern route, passing the Andaman Islands (from where the species has been recorded) on the way to Sri Lanka (or *vice versa*). In winter the species is relatively common in southern India, and particularly in Sri Lanka, in the period before departure to the African continent and, occasionally, on some of the adjacent islands. In spring, Sri Lanka is also the main landfall and staging-post for populations from further east. The BMNH possesses 10 *poliocephalus* skins from Sri Lanka collected, according to the ones dated, in 2 separate periods—September to early February and April–May, mainly from the west and southwest: Bogawantawa, 30.ix.1913 (leg. W. Phillips); Ceylon 26.xii.1870 (Hume collection); Galapitakande, Namunukula, 7.ii.1948 (leg. W. W. A. Phillips); a number of specimens from Dehiwala, 4 km S of Colombo, on the coast of the Western Provinces, dated 18.iv.1950, 12.iv.1953, 27.iv.1953 and 11.v.1953, all collected by W. W. A. Phillips.

The main arrivals on the African mainland seem to occur on the coasts of Kenya and Tanzania, judging by the frequency of collection in these areas. Although not particularly abundant, *poliocephalus* seems to be not uncommon in the more northern localities, as often 2 or more specimens are obtained in the same place on the same or successive days. All specimens of *poliocephalus* in Africa have been obtained between November and April. Localities and dates of the recorded material, and the museums in which they are preserved, are listed in Table 1.

Some *poliocephalus* individuals occasionally use the Seychelles, and probably neighbouring islands, as intermediate stations, occasionally visiting the same areas on their return journey. Up to now, there have been 2 reliable records from the Seychelles: one specimen (BMNH) found dead in Mahé, 25.iv.1965 (leg. C. W. Benson, BMNH reg. no. 1967.39.2); the other, also found dead on Mahé, at Anse au Pins, October 1979 (RMNH, leg. Dr R. Wilson).

One undated and unsexed (formerly mounted) specimen from Madagascar in the Senckenberg Museum (Frankfurt) collection ('Madagascar, bought by C. Ebenau, 1878') (reg. no. 27780), is labelled as '*rochii*' though I would regard it as *poliocephalus* because it shows all characteristics typical of that species, i.e. (1) the more acute arch of the symphysis connecting the mandible bones, (2) the uniform grey/black coloration of the inner vane of the small feathers covering the carpometacarpal joint on the upper side of the wing, and (3) the buffy or rusty tinge to the grey parts of the throat. Its wing-measurement is rather large (159 mm), but well within the range of male specimens of *poliocephalus* (see Appendices 1 & 2). In the museum collections which I have examined, it is the sole specimen of *C. poliocephalus* from Madagascar.

Numerous study skins in various museums prove the presence of *poliocephalus* in central Africa. From north to south, the following specimens have been obtained: Kenya (4), Tanzania (10), Malaŵi (2), Zambia (1), Zimbabwe (2) and Mozambique (1). Some of these records have been published by Moreau & Moreau (1937), Benson (1951,1953,1956), Benson *et al.* (1970, 1971, 1976), Benson & Benson (1977) and Clancey (1960, 1964).

The 2 specimens, mentioned above, which were mist-netted and released by Mrs D. B. Hanmer in Nchalo, Malaŵi, on 14 and 16 April 1987, were considered also to be *poliocephalus* on the basis of their measurements and weights: wing 159 mm, tail 126 mm, 46.9 g, and wing 160 mm, tail 128 mm, 47.5 g, respectively. Both specimens were of the blue phase, apparently immatures which had recently moulted into adult dark-grey plumage. One bird (16.iv.1987) was in completely new plumage, the other (14.iv.1987) was also in new dress, except S 4. These new plumages are in agreement with the moulting pattern of *C. poliocephalus*, at the beginning of its breeding season, but certainly not in agreement with the moult of *C. rochii* at this time of year. Moreover, both specimens showed typical *poliocephalus* plumage-features, having a deep reddish (tending to crimson-red) plumage on the nape and the side of the neck, and the grey throat area faintly buffy (D. B. Hanmer), shown in a colour-slide of the 14.iv.1987 specimen, provided by Mrs Hanmer.

TABLE 1
List of specimens of *Cuculus poliocephalus* collected on the African mainland, arranged from North to South

NUMBERS and LOCALITY		
Kenya	(4)	Coastal region near Kilifi (Sokoke Forest) (3°37′S, 39°50′E), 10. iv.–18.iv.1958 (leg. P. A. Clancey), Durban Museum.
Tanzania	(2)	32 km and 48 km NW of Tanga (c.4°54′S, 38°44′E), 31.iii.1934 (leg. R. E. Moreau), BMNH.
	(2)	Amani (5°09′S, 38°36′E), 26.xi.–4.xii.1931 (leg. R. E. Moreau), BMNH.
	(3)	Nkumbi (5°11′S, 38°54′E), 8 km E of Muheza, 11 & 12.iv.1934 (leg. R. E. Moreau), BMNH.
	(1)	Uluguru Mts., Morogoro Distr. (7°2′S, 37°40′E), 1.iii.1962 (leg. Th. Andersen), RMNH.
	(2)	Mikindani, Mtwara Distr. (10°16′S, 40°05′E), 4 & 5.iii.1965 (leg. Th. Andersen), RMNH.
Zambia	(1)	Jumbe, Luangwa Valley, near Chipata (= Fort Jameson) (13°16′S, 32°07′E), 20.iii.1953 (leg. C. W. Benson), NHMZ.
Malaŵi	(1)	Dedza Distr. (14°20′S, 34°24′E), southern Malaŵi, 6.iii.1951 (leg. C. W. Benson), BMNH.
	(1)	Mitongwe, Ncheu Distr. (14°50′S, 34°45′E), 16.ii.1951 (leg. C. W. Benson), BMNH.
	(2)	Nchalo (16°16′S, 34°55′E), southern Malaŵi, 14.iv.1987 and 16.iv.1987 (mist-netted by Mrs D. B. Hanmer, see text).
Zimbabwe	(2)	Haroni/Lusitu confluence, 360 m (20°02′S, 33°01′E), 19.i.1966 and 17.iv.1964 (leg. H. D. Jackson and a collector given only as P. A. 1518, respectively), NHMZ.
Mozambique	(1)	6.2 km W of Mocuba (16°52′S, 36°57′E), 29.i.1932 (leg. J. Vincent), BMNH.

Again, I would like to emphasize that I have not seen all material extant in museum collections. Of these, one specimen in the NHMZ, Bulawayo, collected at Danger Hill II, near Mpika (11°30′S, 31°35′E), sex unrecorded, by W. E. Poles on 11.iii.1952 (see also Benson & White 1957, Benson *et al.* 1973) was on loan and not available. It had been recognized by Benson, on the basis of its wing-length, as a true *C. poliocephalus*. Another specimen, an adult male with a wing-measurement of 149.5 mm, collected on Mt. Selinda (20°24′S, 32°43′E), Melsetter District, eastern Zimbabwe by Sandground, on 29.iii.1930 (now in the Museum of Comparative Zoology (MCZ), Cambridge, Massachusetts, USA), surely must be *poliocephalus*. A third specimen, mentioned by Verheyen (1935: 309)

for Shinkulu in the Upemba National Park (c. 8°40′S, 27°00′E), in Zaire, collected 26.xi.1947, has also not been seen. Other specimens may be present in the smaller regional museums, but probably not in southern Africa, as this species is not mentioned in handbooks of regions south of 30°S (Clancey 1960, 1964, Mackworth-Praed & Grant, Ser.2, 1962).

Conclusions

On the basis of vocalization, some biometrical and some minor morphological plumage and mandible characteristics (in adult specimens), *C. rochii* is a good species. Moreover, adult females of *rochii* lack the rufous hepatic phase common in *C. poliocephalus*. Clearly *C. rochii* is not related to *C. poliocephalus* and cannot therefore be united in a superspecies with *C. poliocephalus*.

The main migration route of *C. rochii* is in a northwest direction from Madagascar towards the Congo basin, apparently following a rather narrow 'corridor' on the African mainland (see Fig. 4).

C. policephalus has been recorded from numerous places on the African mainland. It is now shown that it occurs also on the Seychelles (2 records) and in Madagascar (1 record) at a time when *rochii* is also present.

These 2 cuckoo species are probably much more common in their winter quarters than collecting and sight records indicate, being rather shy and extremely elusive. Moreover, on their winter grounds, they are completely silent.

Acknowledgements

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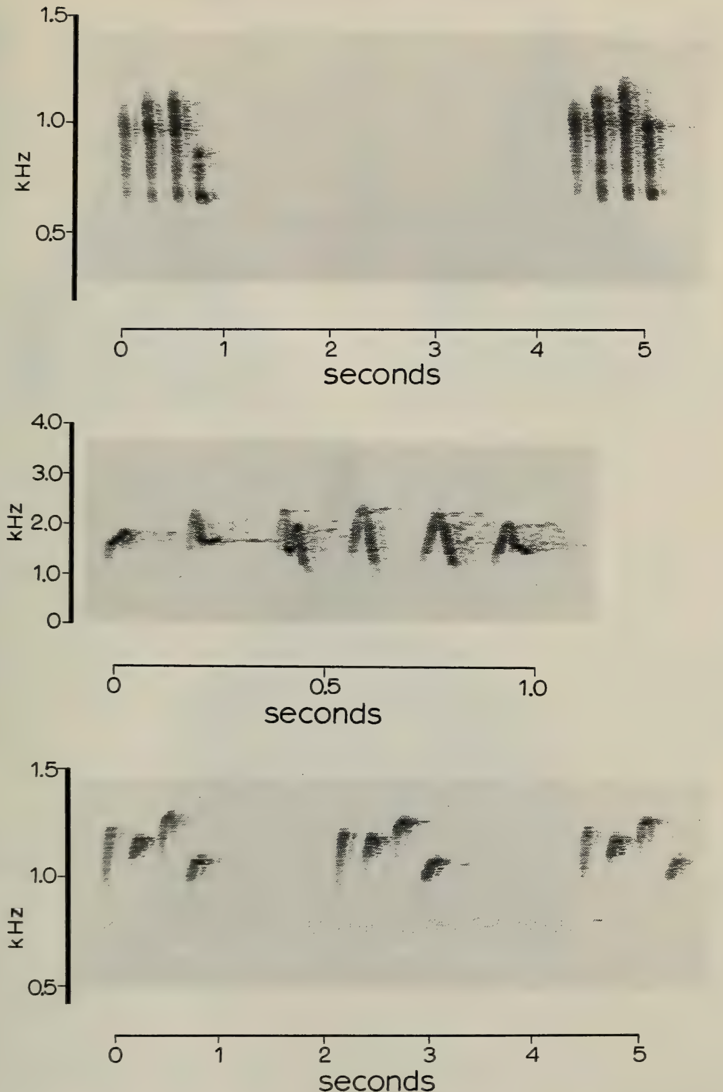
APPENDIX 1

Wing- and tail-length measurements (in mm) of material examined of *Cuculus rochii* and *Cuculus poliocephalus*

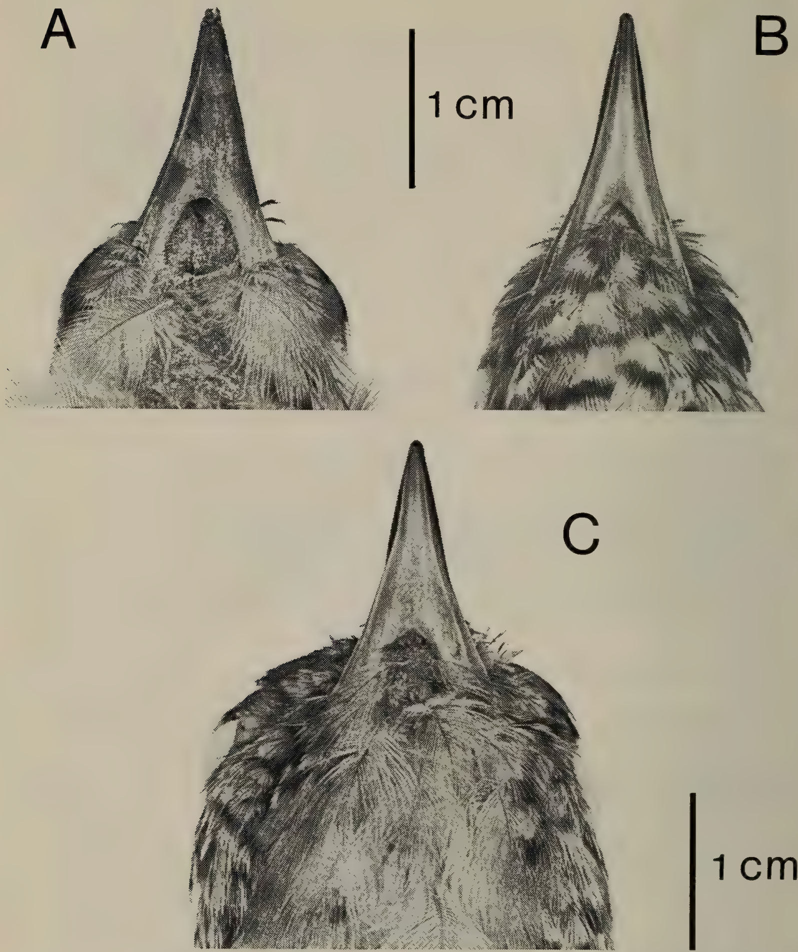
Madagascar Cuckoo *Cuculus rochii*

Madagascar and Africa

	Wings[1]				Tails			
sex & age	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
ad. ♂	28	(160–179)	167.0	4.96	28	(135–155)	144.3	5.70
ad. ♀[2]	4	(158–163)	160.5	2.08	4	(134–141)	138.1	3.01
imm.	19	(149–166)	157.0	4.96	18	(132–156)	141.2	7.33



J. H. Becking. Figure 1. Sonograms comparing the calls of 3 cuckoo species. **A.** *Cuculus rochii* (recorded in Madagascar). **B.** *Cuculus poliocephalus* (recorded in Japan). **C.** *Cuculus micropterus* (recorded in India).



J. H. Becking. Figure 3. Comparison of the angle between left and right mandible bones and arch of the symphysis connecting them in *Cuculus rochii* and *C. poliocephalus*. In *rochii* adults the angle between the mandible bones is wide and the connexion rounded, in *poliocephalus* adults the angle is narrower and the connexion more acute. In immatures these features are not so pronounced, but in *rochii* the angle of mandible bones is still wide.

(A) Adult *Cuculus rochii* (BMNH reg. no. 80.5.1.3), (B) Adult *Cuculus poliocephalus* (BMNH reg. no. 87.12.2.143), (C) Immature *Cuculus rochii* from Durban, Natal (BMNH reg. no. 89.6.25.94).

APPENDIX 1
Continued

Madagascar Cuckoo *Cuculus rochii*

Madagascar and Africa

	Wings[1]				Tails			
sex & age	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
nestlings & fledglings	3	(39–56)	46.00	8.89	3	(85–97)	90.7	6.03
ad. sex ? (app. mainly males)	11	(159–178)	168.6	5.92	11	(131–153)	143.0	5.90

Lesser Cuckoo *Cuculus poliocephalus*

India

	Wings				Tails			
sex & age	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
ad. ♂	6	(149–161)	154.5	4.23	6	(124–142)	134.0	7.62
ad. ♀	10	(144–154)	149.6	3.24	10	(123–132)	128.4	3.24
imm.	8	(136–152)	144.6	5.21	8	(115–137)	127.8	7.30

China (all in MNHN)

	Wings				Tails			
sex & age	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
ad. ♂	1	159	–	–	1	136	–	–
ad. ♀	–	–	–	–	–	–	–	–
ad. sex ? (app. mainly males)	8	(155–162)	158.1	2.30	8	(127–139)	132.3	3.54

Africa

	Wings				Tails			
sex & age	n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
ad. ♂	3	(151–154)	152.0	1.73	3	(131–135)	133.7	2.31
ad. ♀	4	(146–153)	150.3	3.10	4	(127–132)	129.8	2.22
imm.	6	(150–155)	152.7	2.07	6	(127–132)	129.0	4.20

Notes:
[1]In Cuculidae, the left and right wing measurements are often dissimilar. In the above measurements, the greatest wing-length has always been used, measured flat.
[2]A probably wrongly-sexed "female" (wing-length 174 mm) in the Senckenberg Museum (reg. no. 27781) is excluded from this table.

The wing measurements of both adult males and females of *rochii* differ significantly from those of adult *poliocephalus*. The statistical T-test (Student's T-distribution) gives the following highly significant values: $t_{32} = 5.72$, $P < 0.001$ for the males and $t_{12} = 6.15$, $P < 0.001$ for the females. There are also significant differences between wing-measurements of the males *v.* females of each species: these are $t_{30} = 2.56$, $P < 0.02$ for *rochii* and $t_{14} = 2.62$, $P = 0.02$ for *poliocephalus*.

APPENDIX 2
Measurements and weights of *Cuculus poliocephalus* on the Asiatic continent

Mist-netted specimens
(data through the courtesy of Dr H. McClure)

India

Wing (mm)				Weight (g)			
n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
10	(142–158)	149.3	6.14	10	(32–44)	40.1	3.86

APPENDIX 2
Continued

Mist-netted specimens
(data through the courtesy of Dr H. McClure)

Japan

Wing (mm)				Weight (g)			
n	range	$\bar{x}$	SD	n	range	$\bar{x}$	SD
1	145	152.0	–	1	56.4	–	–
1	159		–	1	(93)	–	–

Ali & Ripley (1981)
India

	Wing (mm)	Tail (mm)	Weight (g)		
♂♀	(142–162)	(126–137)	2♂♂	(Nepal, May)	48 & 54
			6?	(Pt. Calimere, October) (ringed specimens)	32–44

Note. Point Calimere (10°18′N, 79°51′E), Tamil Nadu, is a protruding cape of the southern tip of India, separated by the Palk Strait from the northern point of Sri Lanka (Jaffna). It is probably on the main migration route of northwestern and northern populations of *C. poliocephalus* to Sri Lanka.

BOOKS RECEIVED

Nikolaus, G. 1987. *Distribution Atlas of Sudan Birds.* Paperback, 240 × 165 mm. Alexander Koenig Zoological Research Institute and Museum, Bonn, DM.

This comprehensive checklist, in English, covers 938 species recorded to 1986. Distribution is plotted on the Sudan map gridded into 240 one degree squares. Each species recorded in ⩾3 squares has its own map and text covering migratory/residential/breeding status, general habitat and abundance on a 6 point scale; for rarer species, the square coordinates, and for species recorded less than 5 times, the references are given. By ingenious abbreviations and symbols the author has accommodated all this data together with names, English and scientific (in trinomials where appropriate), with 3 species to a page. A few species typical of different genera are well illustrated in black and white. There is a gazetteer which also gives altitudes, and a list of the larger collections of, and literature on, Sudan birds.

The few errors of presentation (e.g. inverted order of texts on p. 48; the distribution of *M. m. aegyptius* on map 124.1 confused with *M. m. parasitus* on map 124.2) hardly detract from this typical example of thorough German research: an essential basis for further field research.

Walker, P. M. B. (Ed.) 1988. *Chambers Science and Technology Dictionary.* Pp. 1008. Chambers: Cambridge. Paperback. 23 × 15 cm.

This excellent volume is the successor to *Chambers' Technical Dictionary,* first published in 1940 (revisions 1958, 1971, 1974). Professor Walker makes no claim that the book will replace the expert's own specialist dictionary, and states, it would seem correctly, that it "will help the physician to understand a term in molecular biology, the layman to comprehend a medical term and both to talk to their builder in an informed manner". Of the 45,000 entries, 3300 zoological terms are included, the same number as for Chemistry and for Engineering, the most for any of the 6 major disciplines treated. Whatever the price, a very good buy.

Brazil, M. 1988. *A Birdwatcher's Guide to Japan.* Pp. 219. Maps. Harper & Row. Paperback. £8·95. 18 × 13 cm.

Published in co-operation with the Wild Bird Society of Japan, the author, with a wide experience of the country for several years, has produced a detailed practical guide to 60 of the best bird-watching sites throughout the Japanese islands. The Introduction (21 pages)

covers topography, climate, vegetation, the avifauna and migration, amongst other things, and there are 8 useful pages of practical information. The localities described are all mapped and each is covered by an assessment of the site and of the birds and their best seasons, in considerable and very readable detail, followed by apparently accurate directions on how to get there and possible accommodation. There is a tick list at the end (with scientific names), a short bibliography and an index of English names. An index of place names would have finished off a useful little book nicely.

Hong Kong Bird Watching Society. 1987. *The Hong Kong Bird Report*. Pp. 112. Compiled by M. L. Chalmers and edited by V. B. Picken. Paperback. 21·5 × 14 cm.

Besides the usual records of interest about different species, this well produced report includes additions and corrections to the 4th edition of the *Checklist of the Birds of Hong Kong* (1986) and a number of other contributions, including bird counts, birds new to Hong Kong, significant breeding records and a well illustrated paper on *Tringa guttifer*.

Inskipp, Carol. 1988. *A Birdwatcher's Guide to Nepal*. Pp. 115. Line drawings and maps. Prion Ltd. PO Box 158, Sandy, Beds, SG19 2DZ, UK. £8·75. 16·5 × 24 cm.

A guide to where and how to watch birds in an increasingly invaded kingdom of very special, often fragile, habitats. The contents include general information on travel and accommodation, etc, 27 pages of information on 18 or so sites and 36 pages on trekking, including some excellent and essential advice on behaviour towards the friendly and sensitive Nepalese. More should be said in all such guides regarding the invasion of privacy which visitors must be conscientious to avoid and, as well as pointing to the destruction of habitats, they should point out the insidious devaluation of local cultures by callous photography and over-generous rewarding of children. The book ends with 30 pages which include a tick-list of the birds (over 840), mammals, amphibians and reptiles of Nepal.

Reid-Henry, D. & Harrison, C. J. O. 1988. *The History of the Birds of Britain*. Pp. 224. 48 coloured plates and many line drawings. Collins. £14·95. 20 × 29 cm.

David Reid-Henry's clearcut portraiture of birds is well known and this volume brings together some fine examples painted 15 years ago, as well as some enjoyable sketches from his notebooks. 'The' history deals in 15 pages with the earliest times, the Pleistocene and the Recent period and their birds, 'Man-modified Britain' and 'The Twentieth Century'. In the remaining text, each species' field characters, breeding and migration habits are dealt with quite fully, together with describing changes in status over historical times. Each family and subfamily has a useful general introduction, and the whole text is written in a welcome relaxed style.

Nature Conservancy Council. 1987. *Birds, Bogs and Forestry:* by D. A. Stroud, T. M. Read, M. W. Pienkowski & R. A. Lindsay. Edited by D. A. Ratcliffe & P. H. Oswald. Pp. 121. Soft covers. 21 × 29 cm.

An extravagantly produced, glossy report on the peatlands of Caithness and Sutherland, divided into regimented numbered sections and sub-sections with many large diagrams and some excellent coloured photographs. The text is a well produced report which deals with the blanket bogs, the upland bird survey of the area and the effects of afforestation on the ecosystem together with international implications. One cannot help musing that much less expenditure on prestige production could have allowed the good work of the authors and the scientific results to speak more loudly for themselves; one must wonder whom the report is intended to impress, and who will fail to come across it in this format.

Nature Conservancy Council. 1987. *Seabirds in the North Sea:* by M. L. Tasker, A. Webb, A. J. Hall, M. W. Pienkowski & D. R. Langslow. Pp. 336. £12. Soft covers. 21 × 29 cm.

This is the final report of phase 2 of the NCC's Seabirds at Sea Project (Nov 1983–Oct 1986) in a glossy but less distracting format than sometimes. The work contains very many data covering the physical and biological environment, survey methods, data handling, map interpretation and breeding populations, covering 92 pages. All the species occurring in the North Sea are then dealt with individually under various headings such as feeding, breeding etc and there are numerous large diagrams and maps of distributions. The NCC and the authors are to be congratulated on initiating and successfully completing this excellent survey.

Robertson, P. A. 1988. *The Pheasant*. Pp. 24. Many coloured and black-and-white plates. Shire Publications. £1·25 Soft covers. 14·5 × 20 cm.

Tyler, Stephanie J. & Ormerod, S. J. 1988. *The Dipper*. Pp. 24. As above.

Two more enjoyable brief accounts by two experts. Dr Robertson is a Senior Scientist at the Game Conservancy; Dr Tyler is a Conservation Officer of the RSPB in Wales, already known for her work on both the Dipper and the Grey Wagtail, while Dr Ormerod is a Senior Ecologist of the Acid Water Unit of the University of Wales researching into aquatic invertebrates. Both booklets provide neat, informative texts on the life-style of the 2 species, and the illustrations are attractive. Both booklets are excellent examples of writing aimed at the intelligent and interested youngest group of budding zoologists.

Mountfort, G. 1988. *Rare Birds of the World*. Pp. 256. 32 coloured plates, 50 line drawings. Collins. £12·95 Hardback. 17 × 24·5 cm.

Guy Mountfort provides a frightening account of the 1000 species of birds at most risk of extinction in this Collins/ICBP handbook. The species are treated in detail under zoogeographical regions, covering their history and present predicaments and conservation projects being undertaken for their survival. Each region has an introductory section on habitat destruction and change, both in the past and, importantly, in the present. The author's worldwide personal experience with birds and at the head of conservation on a global scale for a great many years qualifies him exceptionally for this thorough and important review. Much of the information has not been available before, except in the more technical scientific literature, for gathering which the ICBP deserves the greatest credit.

The illustrations by Norman Arlott add considerably to the book's attractions, though the coloured portraiture might be considered rather stark, despite some background representation of habitats.

In 2 appendices are given a list of the world's threatened birds and another of birds presumed to have become extinct since 1600. It is sad to speculate that in another mere 10–20 years time several names may have had to be transferred from the first list to the second.

Johnsgard, P. A. 1988. *The Quails, Partridges and Francolins of the World*. Pp. 264. 127 colour plates. 23 line drawings and 42 maps, all by the author. Oxford University Press. Hard covers. £47·50. 28 × 22 cm.

A second beautifully produced volume of watercolours painted by Major Henry Jones at the turn of the century and in the possession of the Zoological Society of London (see *The Pheasants of the World* by the same author—*Bull. Brit. Orn. Cl.* 106(4): 180). There are 5 species specially painted by T. J. Greenwood and M. Marcuson which illustrate the 5 species not painted by Major Jones and which complete the group. The text has had to be fairly condensed, but covers adequately taxonomy and zoogeography, reproductive biology, ecology and population dynamics, growth, vocalization and behaviour. The species are dealt with in some detail under various headings. Another of this author's valuable monographs and besides, one to give much aesthetic pleasure.

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